The Effect of Media Annotation Technology on Enhancing the Use of Discourse Markers within Communicative Speech

by

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THE EFFECT OF MEDIA ANNOTATION TECHNOLOGY ON ENHANCING

THE USE OF DISCOURSE MARKERS WITHIN COMMUNICATIVE SPEECH

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ABSTRACT

Language learners need to understand and apply appropriate discourse as part of the process of attaining "communicative competence" (Canale, 1983) needed to fulfill academic and social-adaptive functions. Students who are able to apply discourse strategies within the classroom demonstrate higher levels of metacognition and critical thinking (Reznitskaya et al, 2001; Kramarski and Mevarech, 2003; Mercer, 2004). Given the opportunity to reflect upon their own learning, students often become more engaged (Lattuca and Stark, 2011, p. 221). Language educators may better serve contemporary students, who are motivated by effective integration of technology in the curriculum (Knight, 2008) by using this technology to increase opportunities for communication, reflection (metacognition) and overall engagement.

This study used a between-subject design involving 68 international students at a university English language program divided between treatment group 1 (n =37) and treatment group 2 (n = 31). The research examined the effect of annotation functionality within VoiceThread, a popular web-based multimedia platform, as a means to promote participants' acquisition and appropriate use of discourse markers through the process reflecting upon recorded speaking performances. Although the effectiveness of digital annotation technology was not revealed via a significant interaction effect, a significant main effect provides evidence of the effectiveness of more basic VoiceThread functions in promoting communicative language. Follow-up qualitative interviews were used to gain insight into students' experiences with the technology.

Keywords: communicative competence, discourse markers, ePortfolios, media annotations, metacognition, VoiceThread

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CHAPTER I: INTRODUCTION

The premise of this research lies at the confluence of a plurality of important educational issues, including the needs of a growing number of international students at U.S. universities, the importance of instruction of communicative language and spoken discourse, as well as the role of technology in education to facilitate student engagement. This research focuses upon the ability of educators to instruct students with respect to effective use of *discourse markers* in order to facilitate communicative language abilities. *Discourse markers* can be conceived of as words or phrases that provide rhetorical cues, social cues or cues related to an individuals' thought processes (Fung and Carter, 2007). Use of effective discourse is an essential part of communicative skills which are, in turn, essential for student engagement within the classroom as well as success outside the classroom within the contexts of interacting with a variety of stakeholders within academic and professional communities, for example, within the context of negotiating projects, professional networking, or speaking with professors or potential employers.

Instruction of Spoken Language

Educators, including language educators, strive to prepare students for a more complex, service-oriented economy that often demands higher-level thinking and communication skills (Lavy and Yadin, 2013, p.416). Nevertheless, too often, educators as well as researchers fail to provide enough attention to the instruction of speaking skills. In the past, within a manufacturing-based economy, discrete skills often sufficed; however, within the world of the contemporary workplace, more complex skills, including the ability to communicate complex ideas, is necessary (Stasz, 1997; Warschauer, 2000). These complex ideas may include negotiating business deals, providing employee performance reviews, mediating work conflicts,

presenting keynote speeches and so forth. Educators must focus on teaching more sophisticated language representative of "cognitive academic language proficiency (CALP)," which represents the ability to express more complex, abstract ideas clearly (Cummins, 1980). That is, contemporary language educators are responsible for teaching higher-level linguistic skills beyond *basic interpersonal communicative skills (BICS),* which represents the ability to express concrete ideas within everyday conversations. The more sophisticated proficiency in communication skills represented by CALP may correlate to proficiency in critical thinking skills (Felton and Kuhn 2002; Joiner and Jones 2003). Research and educational goals need to better reflect this need for higher-level communication skills by, for example, seeking to assess a diversity of speaking tasks.

This research focuses specifically upon students' ability to use appropriate discourse markers within speech. These discourse markers are an essential component of *communicative competence*. Communicative competence, or the ability to communicate effectively in a language, consists of the ability to demonstrate *discourse competence*, as well as other inter-related components of communication, *grammatical competence, strategic competence*, and *socio-linguistic competence* (Canale, 1983). Language learners must use specific discourse markers to not only develop and organize their ideas and build cohesive arguments but also to maintain social protocols (Fraser, 1999) which assist them in social adaption to a new culture. Within the context of a collaborative working group, an example of a discourse marker used for interpersonal functions may include the phrase *"How about we…?"* in order to put forth a suggestion or "*Everyone seems to agree…"* in order to reach a compromise (Derek Bok Center for Teaching and Learning at Harvard University, para. 20). Use of these discourse *devices* is also correlated to metacognition and critical thinking (Reznitskaya et al, 2001; Kramarski and Mevarech, 2003; Mercer, 2004; Mercer et al, 2004). These *rhetorical* discourse markers within

formal argumentation may include utterances such as "*some people may disagree because*" or *"people would argue"* (Reznitskaya et al, 2001, p.161-163). Although classification systems of discourse markers vary, Fung and Carter's 2007 system, which include a *cognitive category*, *structural category, interpersonal category*, and *referential category* of discourse markers (p. 415), represents one of the best efforts. This schema of discourse markers guides the hypotheses within this study. Despite their importance, educators often avoid assessment of specific usage of discourse markers within communicative speech due to challenges related to assessing speaking skills.

Despite the importance of spoken communication, "speaking is…the most difficult skill to assess reliably" (Alderson and Bachman, 2004. p. ix). Speaking skills have historically not been tested within many important standardized tests (Buck, 2001; Powers, 2010). This may be because assessing speaking tests is often time-consuming and expensive (Buck 2001). This omission of speaking skills within tests may also be due in part to the temporal nature of spoken language compared to the permanent nature of written language. That is, it is easier to grade a written essay than, say, a spoken interview, even if the interview has been recorded for future reference. Although communicative skills play a crucial role in cognitive and academic development, in part because of the relative difficulty of assessing spoken language, educators too often devote too few resources to instruction in these skills that are necessary for academic success (Buck, 2001, p.96).

International Students at U.S. Universities

Intensive English programs, particularly those within large state research universities, are becoming more important to the goals of these U.S. universities. Universities in the United States that experience low enrollments due to U.S. demographic trends often look to recruiting

more international students in order to recoup and increase revenues (Andrade, 2006; Marshall, 2005). These students represent an increasingly important demographic within American higher education, particularly large state universities; these students contributed an estimated $21.8 billion to the American economy in 2013 (NAFSA, 2012). These universities, which recruit these students in earnest (Andrade, 2006; Marshall, 2005) from thousands of miles away, are responsible for attending to the unique social and linguistic needs of these particular individuals. Universities have economic interests in retaining these students; they need to devote sufficient resources in attending to their unique set of needs, including useful, innovative, and engaging language instruction related to spoken communication. These international students, many of whom require English language training, constitute a growing and increasingly important demographic among university campuses in the U.S. and have a unique set of educational and linguistic needs.

International students' educational and linguistic needs are diverse as well as unique. These communicative skills are, nevertheless, important for the academic (Rounds, 1987; Hoekje and Williams, 1992; Eggly et al, 1999) and social adjustment (Chapdelaine et al, 2004, p.170; Zimmermann, 1995) of international students. International students often feel uncomfortable speaking to instructors and English-speaking peers and may be uncomfortable giving presentations (Grey, 2002, p.160). They may wish to obtain teaching assistant positions (Rounds, 1987) and matriculate into professional training programs, such as medical internships (Eggly et al. 1999). These students may wish to gain communicative language skills to adapt socially within a new culture (Chapdelaine et al, 2004, p.170; Zimmermann, 1995) that is to learn culture-specific social skills needed to integrate within the social life of their new communities.[1]

[1] Within the context of immersive language learning contexts, for example intensive English programs in the U.S., students who adapt an "integrative motivation" versus an "instrumental orientation" (Lambert 1972) of language learning and try to use language to communicate within the target language learning community benefit academic

Although these unique needs are important, too often they are subsumed by other learning goals.

However, educators and researchers have not given these unique needs sufficient attention. Educators may find it difficult to assess the performance of communicative language abilities (Alderson and Bachman, 2004. p.xi). Perhaps because of this difficulty in assessing spoken language, research on the speaking curriculum is scarce within the literature. Instruction as a means for facilitating international student adaptation, with the possible exception of training international teaching assistants (for example, Rubin, 1993; Fitch and Morgan, 2003), seems to be overlooked within the literature. Greater attention to speaking skills within the research literature may help to encourage educators to better serve these student needs.

International students, like domestic students, are likely to benefit from educators who engage by "promoting reflection and developing metacognition" (Lattuca and Stark, 2011. One way universities may better serve these international students is by providing engaging instruction in communicative skills through appropriate integration of technology. Educators of international students may need to consider new, innovative types of instruction and technology in order to meet these unique and diverse educational and linguistic needs.

Computer-Assisted Language Learning

Educators and researchers may better serve the needs of international students through the use of computer-assisted language learning (CALL). Implementation of CALL serves students in multiple ways. Contemporary students often demand a more interactive and efficient means of instruction to get a "return on investment" (Paulson, 1998). These modern students may be used to experiencing their lives, including interpersonal communications, through use of digital technologies and may perceive traditional means of instruction as outdated (Prensky, 2001).

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to a greater extent than those students who do not (MacIntyre, 2003).

Technology can enhance access to education (Garnham and Kaleta 2002; Garrison and Kanuka, 2004) and can better engage students by allowing for constructivist forms of pedagogies. For example, higher education administrators look to ePortfolios as possible means to raise student engagement (Knight, 2008; University of Kansas Retention and Timely Graduation Task Force Report, 2010 p.7). Educators could use technology such as CALL to create innovative ways of teaching to better engage and meet the needs of students.

Despite this apparent need for greater integration of CALL, there is a shortage of literature on the uses of CALL in the instruction of communicative language teaching. Although previous studies have discussed the acquisition of communicative speaking skills (for example, Cummins, 1980; Alderson and Bachman, 2004; Krashen, 1982), the use of CALL to develop these skills has not been discussed in great detail. For example, there is a scarcity of literature on the topic of ePortfolios in the context of communicative language teaching as well as a lack of research on the topic of metacognition and CALL within the context of communicative language teaching (CLT). Language educators would benefit from greater insights about how more effectively implement CALL for the purposes of communicative language teaching. Educators in general would benefit from research that investigates the question of whether and/or how learning technologies such as ePortfolios can promote reflection among learners. Researchers can better serve the needs of language learners and the educators who teach them by enhancing research in inter-related areas of instruction in communicative language and technology as well as issues of motivation and engagement.

Quantitative Research Questions

This research sought to determine whether the VoiceThread media platform, serving as a form of ePortfolios integrated with annotation functionality, could facilitate development of communicative speaking skills among university English language learners within the contexts of giving didactic presentations, having discussions and debates as well as maintaining other types of pragmatic negotiations, such as negotiating tasks within a group project. The four categories of discourse markers considered both individually and as a collective relate to a schema of discourse markers proposed by Fung and Carter (2007). Thus, quantitative research questions within my study were:

1. Does use of digital media annotations mediated within VoiceThread improve students' ability to use discourse markers appropriately in a general sense? That is, is there a significant difference between students using the digital media annotations and a group not using them?

2. Does use of digital media annotations mediated within VoiceThread improve students' ability to use *expressive* discourse markers appropriately exemplified by expressing ideas within academic discussions and debates? That is, is there a significant difference between students using the digital media annotations and a group not using them?

3. Does use of digital media annotations mediated within VoiceThread improve students' ability to use *structural or rhetorical* discourse markers appropriately within didactic presentations? That is, is there a significant difference between students using the digital media annotations and a group not using them?

4. Does use of digital media annotations mediated within VoiceThread improve students' ability to use *interpersonal* discourse markers appropriately within negotiations and other pragmatic

contexts? That is, is there a significant difference between students using the digital media annotations and a group not using them?

5. Does use of digital media annotations mediated within VoiceThread improve students' ability to use *functional, referential* discourse markers appropriately? That is, is there a significant difference between students using the digital media annotations and a group not using them?

Quantitative Research Hypotheses

Accordingly, the hypotheses are:

1. Compared to the other group, students who use digital media annotations mediated within VoiceThread will demonstrate significant improvement in their ability to use discourse markers appropriately in a general sense.

2. Compared to the other group, students who use digital media annotations mediated within VoiceThread will demonstrate significant improvement in their ability to use *expressive* discourse markers appropriately, for instance, within academic discussions and debates.

3. Compared to the other group, students who use digital media annotations mediated within VoiceThread will demonstrate significant improvement in their ability to use *structural or rhetorical* discourse markers appropriately within didactic presentations.

4. Compared to the other group, students who use digital media annotations mediated within VoiceThread will demonstrate significant improvement in their ability to use *interpersonal* discourse markers appropriately within negotiations and other pragmatic contexts.

5. Compared to the other group, students who use digital media annotations mediated within VoiceThread will demonstrate significant improvement in their ability to use *functional,*

referential discourse markers appropriately.

Goals for Qualitative Research

Within this mixed-methods study, research sought to answer questions related to why students benefitted from using VoiceThread, particularly with regards to its media annotation functionality. This qualitative research examined attitudes towards using this technology and how students felt it either contributed or failed to contribute to their growth as language learners. Issues related to motivation towards using technology as well as the convenience and usability of the technology are included within this discussion. The usefulness of the technology are considered within the context of other instructional strategies and learning resources available to students. Thus, research questions guiding the follow-up qualitative component of the study are as follows:

1. What are students' attitudes towards assignments involving use of digital annotations mediated within VoiceThread as an online platform with regards to the facilitation of communicative speaking practice? How motivated and engaged are they within the processes of completing these assignments, for example, how are they able to reflect upon these processes?
2. Why do these students hold these attitudes and why do they exhibit these levels of motivation and engagement?

CHAPTER II: LITERATURE REVIEW

This mixed-methods research attempts to bridge inter-related topics relating to communicative speaking skills, instruction in various modes of discourse, computer assisted language learning (CALL), as well as efforts to increase engagement in teaching, for example, through promotion of metacognition. The interconnections between these sub-fields, for example, research on the possible role of educational technology in assisting students in the acquisition of communicative speaking skills, remain unclear and underdeveloped within existing literature.

Communicative Competence and Communicative Language Teaching

Language educators have not always valued the ability to use language for authentic communication and methods of assessing these authentic uses of communicative language have not always existed. Language educators have at times depended on more passive modes of language learning, including grammar-translation and audio-lingual methods of learning. Dell Hymes, American anthropologist and linguist, was perhaps the first researcher to use the term *communicative competence* (CC) (Brown, 2008, p.218) in 1972. In the 1970's applied language research began to differentiate between more declarative forms of knowledge concerning linguistic forms and knowledge that actually allows learners to use language within human interactions (p.219). At about this time, socio-political influences within Europe led the Council of Europe (2001) to develop the *Common European Framework of Reference for Languages* emphasizing the need for practical communicative competences to more effectively transcend national linguistic barriers (p.1). Meanwhile, in North America, several researchers began to

more effectively define the term *communicative competence.* Thus, educators and researchers have only begun to promote methods of language education that promote authentic communication within the past 50 years. Many language educators now feel a variety of types of communicative activities, including debates, discussions, and role plays contributes to oral communication skills as well critical thinking skills (Kennedy, 2007 p.183; Richards, 2005). Thus, educators and researchers have raised the status of CC within language education.

Communicative language consists of multiple elements that can be assessed either separately or in a holistic manner; communicative language can be assessed as either formal or informal modes of discourse. *Discourse competence,* or the ability to use discourse appropriately, is one crucial element comprising CC that is distinct from simply a learner's level of grammar and vocabulary. In seeking to categorize the specific components of CC, Canale (1983) classified CC into four elements: *grammatical competence*, the ability to express ideas using correct syntax" as well correct usage of vocabulary; *strategic competence,* the ability to carry out tasks effectively and appropriately using language; *socio-linguistic competence*, the ability to negotiate varying social contexts; and *discourse competence*, the ability to develop ideas in an organized manner (Canale, 1983).[2] Once learners achieve a certain level of mastery of language skills through appropriate input and practice, learners can generate *comprehensible output* which represents *communicative competency* (Swain, 1985). Language learners can demonstrate these conversational skills within every day, casual register of discourse, or *basic interpersonal communicative skills (BICS);* or within a formal, academic register of discourse,

[2] Further pioneering the way to new studies into discourse analysis, Michael Halliday outlined seven functions of language with regard to the grammar used by children including an "instrumental function" which seeks to enact action upon the environment; serves to manipulate the environment; a "regulatory function"; a "representational function," used to convey information; a "interactional function"; a "personal function," used to convey emotions; a "heuristic function," used to obtain information and an "imaginative function" (Halliday, 1973).

cognitive/academic language proficiency (CALP) (Cummins, 1980). Thus, educators and researchers can measure CC according to different sub-elements, including *discourse competence*, and they can measure communicative competence as a whole according to the formality or informality of the register of the language.

Discourse competence, although inter-related with these other sub-elements of communicative competence (Celce-Murcia, et. al, 1995 p.10), is important to consider as a separate entity. Discourse competence relates to "the selection, sequencing, and arrangement of words, structures, sentences and utterances to achieve a unified spoken or written text" (Celce-Murcia, et. al, 1995 p.13). Discourse includes *cohesion* and *structure* but also *conversational structure* (p.13). *Cohesion* refers to conveying relationships between ideas (p.15). *Conversational structure* may include not only conversations but also "narratives, interviews or lectures" (p.16). Aspects of *conversational structure* include opening and closing conversations, turn-taking, giving verbal or non-verbal feedback (the concept of *backchannel*), as well as *repair*, that is, correcting oneself or others within conversations (p.16). Use of specific discourse markers is an important aspect of discourse competence and communicative competence as a whole.

Second Language Acquisition and Communicative Competence

This concept of CC has influenced the curricula of language educators, who, beginning in the 1970s, have begun to adopt *functional syllabuses* (Council of Europe, 2001, p.225). These types of curricula often focused upon more *functional* approaches to language teaching (Council of Europe, p.13). Language teaching focusing on functions may include such tasks as initiating a conversation, asking for help, negotiating a meeting time, ending a conversation, and so forth; these approaches became known collectively as approaches to *communicative language teaching*

(CLT). Despite a lack of universal acceptance, CLT has remained influential in language teaching, possibly because it is viewed as promoting more authentic learning within the classroom, which is important in attending the needs of students with diverse backgrounds and needs in adjusting to new cultures.

Educators and researchers value CC and the pedagogy of CLT because of CC's ability to explain important concepts of second language acquisition, thus providing credence to more constructivist pedagogies and the integration of technology in language teaching. *Comprehensible input* is a key component of Krashen's (1984) Input Hypothesis. This concept of *input* is a necessary prerequisite for communicative and task-based learning (Nunan, 1991). In other words, students must have access to clear instruction with regards to the purpose, structure and so forth of the language necessary for instruction. Consistent with both CLT and social constructivist traditions in education, Michael Long's Interaction Hypothesis posits that the interaction in itself between language learners and more experienced peers constructs *comprehensible input* (Krashen, 1982) that serves as a crucial element within the process of language learning (Long, 1996). This Interaction Hypothesis is not incompatible with Krashen's Input Hypothesis; that is, language learners require both *comprehensible input* and interaction with slightly more proficient peers. Similar to the Interaction Hypothesis, Swain (1993), in her Output Hypothesis, posits that output, or practice in using a language, is as important of a factor as "input" in learning a language. Accordingly, *output* is necessary in obtaining "meaningful practice" and "test[ing] out hypothes[es]" through the processes of language learning (Swain, 1993, p.159-160). The Input Hypothesis, the Interaction Hypothesis and the Output Hypothesis are all compatible to premises underlying communicative language teaching: these three ideas, particularly the latter two, promote a sense of active learning and an emphasis upon procedural skills rather than simply declarative knowledge. In its compatibility

with major theories of second language acquisition and its promotion active learning, the concept of communicative competence has left an enduring impact upon the field of applied linguistics. Implementing technology into classrooms may make contributions of CC more apparent since technology allows learners to re-listen to useful *inputs* multiple times, technology facilitates interactions with individuals physically present or not physically present, and technology provides convenient access to a greater range of useful *inputs,* including the opportunity to re-listen and learn from previously recorded interactions. The researcher hopes the current researcher provides insight to the instruction of communicative practice within a variety of contexts.

Discourse Markers

Language learners need to achieve discourse competency, including knowledge of discourse markers, in order to achieve CC. Students achieve CC through mastery of various related concepts of language, including demonstration of *discourse competence*, as well as *grammatical competence, strategic competence, and socio-linguistic competence* (Canale, 1983). For language learners to develop and organize their ideas, build cohesive arguments, maintain social protocols such as greetings and requests, and to achieve related elements of CC, notably *strategic competence* and *socio-linguistic competence*, learners must learn appropriate use of discourse (Fraser, 1999). That is, discourse is closely related to aspects of *strategic competence* and *socio-linguistic competence.*

Researchers, particularly within the field of pragmatics, have attempted to categorize discourse markers in order to improve understandings of language and to better teach and assess language. Blum-Kulka and Oshtain's (1984) Cross-Cultural Study of Speech Act Realization Patterns" (CCSARP), which focused upon requests and apologies, represents one of the first

efforts to categorize discourse markers. The Michigan Corpus of Academic Spoken English (MICASE) at the University of Michigan represents a more comprehensive and contemporary effort to collect and categorize examples of discourse, in this case, academic discourse, into one reference source (McNamara, 2007, p.232). These efforts have assisted educators in teaching more useful and authentic language. In terms of providing a schema of different types or categories of discourse markers, perhaps Fung and Carter's 2007 system is the most concise yet all-encompassing; this schema includes a *cognitive category*, *structural category*, *interpersonal category*, and *referential category* of discourse markers (p. 415), represents one of the best efforts and guides the hypotheses within this study. Examples of these four categories are provided in table 2-1. Because of the challenges related to categorizing discourse markers, there is a shortage of research on discourse markers. However, several corpuses and classification systems related to discourse markers provide a degree of guidance for future research as well as practical applications within instruction and assessment.

Table 2-1: Classification of Discourse Markers Accord to the Framework of Fung and Carter (2007)

Category within Fung and Carter's Framework	**Purpose / Function**	**Examples**
Cognitive category	"provide information about the cognitive state of speakers"	*"I think," "I mean"*
Structural category	"indicate the discourse in progress," rhetorical	*"let's start," "second," "let me conclude the discussion by mentioning…"*
Interpersonal category	"mark the affective and social functions of spoken grammar" (p.415).	*"listen," "okay"*
Referential category	"mark relationships between verbal activities"	*"because," "nevertheless"*

The idea of *discourse markers* as a concept is a nebulous term that eludes exact definition. Researchers have made efforts to, for example, categorize discourse markers within certain areas of linguistics, particularly within the subfield of pragmatics. Nevertheless, an exhaustive list of these expressions does not exist. Linguists conceptualize discourse markers as *lexical expressions* which are often also categorized as "discourse connectives, discourse operators, pragmatic connectives, sentence connectives, and cue phrases" (Fraser, 1999 p. 931). These expressions, which draw upon "syntactic classes of conjunctions, adverbs, and prepositional phrases," (Fraser, 1999 p. 931) are used to "relate discourse segments." Discourse markers are often labeled as *sentence adjuncts* and do not alter the grammar of the main component of elicited expressions, but rather serve to connect information, thus guiding the listener's understanding. Discourse markers are not "highly idiomatic," not "a mark of cultural identity" and are applicable to a wide range of contexts (Jones and Carter, 2014, p.38). Although the concept of *discourse markers* as an idea within linguistics is not precisely defined, the idea of *discourse markers* as a term is useful in understanding the structure of language as well as the usefulness of this language.

Discourse markers serve multiple cognitive functions and educators can apply pedagogical strategies to facilitate linguistic and cognitive development through use of these discourse markers. Discourse markers are an essential element of CC that facilitate higher-order thinking. In the context of listening, they improve comprehension of listeners by signaling the relationship between specific utterances and broader ideas within the larger discourse (Fox and Schrock, 1999). When students learn discourse markers, they also demonstrate higher levels of metacognition and critical thinking (Reznitskaya et al, 2001; Kramarski and Mevarech, 2003; Mercer, 2004; Mercer et al, 2004). Use of discourse markers in the form of prefabricated phrases may represent a means to reduce cognitive load in performing speaking tasks. That is,

memorization of *chunks* of language frees cognitive capacity (Davidse et al., 2015 p.16) to attend to other tasks within the working memory. Deductive teaching methods are possibly more effective than inductive methods in teaching discourse (Jones and Carter, 2014, p.37). Metacognitive strategies in teaching students to use discourse markers are seemingly not described in the literature. Thus, though discourse markers seemingly fulfill several cognitive purposes, research on pedagogy capitalizing on the linguistic and cognitive functions of discourse markers seems incomplete, possibly at least in part because of difficulties related to conceptualizing the idea of *discourse markers.*

Assessment of Communicative Competence and Discourse

The American Council on the Teaching of Foreign Language (ACTFL) popularized the Oral Proficiency Interview (OPI) during the CC movement (McNamara et al., 2002, p.221) and contributed to the development of oral assessment within language teaching.[3] The OPI represents more of an assessment scale than an actual prescribed test structure. In 1981, government and academic groups provided grants for the ACTFL and the Educational Testing Service to adapt language proficiency scales and procedures used by the U.S. Department of State to be adapted for use in schools and universities. In 1982, the first OPI training workshop was held (Liskin-Gasparro, 2003, p.484). This important development in oral language testing focused upon providing a "common metric" for assessing speaking (Bachman and Savignon, 1986, p. 380), a "criterion-referenced measure" (p.382). These oral interviews focus upon measurements of *function, content* and *accuracy* (p. 381).[4] The ACTFL has arguably not only

[3] Although the Council of Europe's *Common European Framework of Reference* also represents an influential framework for oral language testing, perhaps the AECFL's oral proficiency interview has been applied within a greater range of assessment instruments.

[4] The "superior" ranking descriptor for the 2012 ACTFL proficiency guidelines, likely adjusted from previous

helped to promote communicative language teaching but also helped teachers to think critically about the purposes of their instruction and assessment. That is, the AECFL differentiates between *practiced tasks* versus *spontaneous tasks* as well as assessment "based on instruction" versus assessment "independent of specific instruction or curriculum" (American Council on the Teaching of Foreign Languages, 2012b, page 5). In addition, ACTFL differentiates between *interpersonal, interpretative* and *presentational modes of communication* within speaking tasks (2012b, p 7). The ACTFL and its OPI has, arguably, contributed greatly to theories and practices related to oral proficiency assessment, for example, within the speaking section on the TOEFL test created by the Educational Testing Service.

Concerns related to the AECFL's OPI include possible subjectivity / inadequate inter-rater reliability, undue focus upon *native speaker* criterions of performance (Liskin-Gasparro, 2003, p.484-5) and whether these assessments represented truly authentic assessments of speaking. Critics of the OPI suggested that authentic assessment require greater opportunities

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versions of guidelines, are as follows:

Speakers at the Superior level are able to communicate with accuracy and fluency in order to participate fully and effectively in conversations on a variety of topics in formal and informal settings from both concrete and abstract perspectives. They discuss their interests and special fields of competence, explain complex matters in detail, and provide lengthy and coherent narrations, all with ease, fluency, and accuracy. They present their opinions on a number of issues of interest to them, such as social and political issues, and provide structured arguments to support these opinions. They are able to construct and develop hypotheses to explore alternative possibilities.

When appropriate, these speakers use extended discourse without unnaturally lengthy hesitation to make their point, even when engaged in abstract elaborations. Such discourse, while coherent, may still be influenced by language patterns other than those of the target language. Superior-level speakers employ a variety of interactive and discourse strategies, such as turn-taking and separating main ideas from supporting information through the use of syntactic, lexical, and phonetic devices.

Speakers at the Superior level demonstrate no pattern of error in the use of basic structures, although they may make sporadic errors, particularly in low-frequency structures and in complex high-frequency structures. Such errors, if they do occur, do not distract the native interlocutor or interfere with communication (American Council on the Teaching of Foreign Languages, 2012a, p.5).

for students to initiate communication, for example, within more interactive forms of assessment and a greater understanding of intercultural communication as related to pragmatics was necessary to accurately assess students from different cultures (McNamara et al., 2002, p.228). In addition, critics suggested greater emphasis should be given to *sensitivity to register* and *cohesion* (Bachman and Savignon, 1986, p. 388). Linguists in the field of pragmatics have argued these oral interviews are not authentic since these interviews fail to take into account cultural influences that influence discourse within students' spoken communication.

Applied Linguists have worked towards alternatives to the OPI, including the creation of discourse completion tasks (DCTs). DCTs measure effective use of discourse and discourse markers. DCTs do not represent a standardized format of testing; instead, they provide researchers and educators with a general strategy involving presenting students with a situational context and allowing students to respond to this situation using whichever cultural point-of-reference that makes sense to them. In order to build upon a conceptualization on which to build these new types of context-based oral assessments, linguists and applied linguists have sought to generate corpora of discourse markers and to categorize the discourse markers within these corpora. Perhaps the greatest of such efforts was the "Cross-Cultural Study of Speech Act Realization Patterns" (CCSARP) which was constructed by Blum-Kulka and Oshtain in 1984. This corpora was limited in scope and focused solely upon pragmatic use of requests, for example, "*Could you please…?"* and apologies, for example, "*I apologize for….*" Nevertheless, CCSARP was crucial to the development of DCTs as an integral part of language assessment (McNamara et al., 2002, p.231) and is useful as a categorization and cross-cultural of pragmatic "discourse sequences" (p.211). DCTs, usually presented to students in written form (McNamara et al., p.230), provide situational contexts which students respond to. These situations may approximate the scenarios within the following example DCT prompts:

> *1. You are studying in your room and you hear loud music coming from a room down the hall. You don't know the student who lives there, but you want to ask him/her to turn the music down. What do you say?*
>
> *2. You are talking to your friend after class. You missed the last class and you want to borrow your friend's notes. How do you ask for help in this case?* (Rose, K, 1994).

Just as there is no single prescribed format of DCTs, there is also no one prescribed method of assessing DCTs. While some researchers may grade student responses holistically, that is, on the overall quality of speech, others researchers such as have utilized a system of coding "semantic formulas," represented by discourse markers, identified within student responses to prompts within the DCT (Bardovi-Harlig and Hartford, 1993. p.6). In this way, DCTs represent a potentially versatile method of assessment. Although there are challenges in creating authentic assessments of speaking, applied linguists increasingly value the measurement of discourse within assessment.

Thus, the OPI as well as DCTs as oral assessments allow for a variety of formats in which tests can be administered as well as a variety of means in which the assessments are evaluated. The format of test administration is an important variable related to the educator's purpose and the assessment's validity. Test format may relate to the issue of whether the assessment takes the form of *static assessment* or *dynamic assessment* (Poehner and Lantolf, 2005; Antón, 2009). That is, within static assessment, assessments such as DCTs can be simply given to students to record individually, without an interlocutor; alternatively, within dynamic assessment students would record the DCT with a partner who was either a class peer or an instructor. Arguably dynamic assessment represents a more authentic mode of assessment that

often allows students to learn more from the experience, depending on their learning style. However, various practicality issues exist related to use of dynamic assessments. For example, instructors may have insufficient time to record a DCT with every student. With regards to the possibility of peer interlocutors work together on a test which assesses individuals, equity issues related to varying degrees of ability levels seem apparent. May (2009) discusses how issues related to fairness seem to emerge within the IELTS test First Certificate of English (FCE) test, which relies upon paired conversation of testing candidates within the holistic assessment of oral English skills (p.416). Test format must be considered in terms of assessment purpose and validity.

Similarly, in terms of the rating of tests, methods and philosophies may vary. While older forms of oral assessment may have focused upon more specific measures such as function, *content* and *accuracy* (p. 381), newer oral assessments may focus upon use of pragmatics and cultural context. Although the term *focused assessment* does not appear frequently in research on language learning, it does indeed sometimes appear. For example, within the instruction of oral communication, Ishihara (2009), describes "pragmatics-focused assessment instruments for classroom use" (p.451). Educators can also grade oral assessments holistically. That is, they can focus less upon grading individual criteria such as use of grammar and pronunciation and instead focus upon the quality of the spoken communication as a whole. In considering issues related to purpose and validity of oral assessments, grading strategy is a crucial factor.

Motivation, Engagement and Metacognition

Educators can greatly impact the level of student motivation and engagement through their particular setting curriculum goals, preparing learning activities, integrating technology, and

fostering a particular classroom climate (Rau et al, 2008; Reynolds and Caperton, 2011) which either fulfills or fails to fulfill students' basic psychological needs within the learning process. Instructors who design curricula and integrate technology can consider Self-Determination Theory (Deci and Ryan, 1985) in understanding why learners ultimately engage or fail to engage with learning activities. These psychological needs include the need for *relatedness* or belongingness, *competence,* or self-efficacy, as well as *autonomy* (Ryan and Deci, 2000, p. 73). Learners' ability to demonstrate more *integrated* self-regulated behaviors (Ryan and Deci, 2000, p. 73) depends at least in part on whether the teacher and the students themselves are able to fulfill these three basic psychological needs (Chen and Jang, 2010, p.742). In order to fulfill these needs, educators must ensure that the classroom curriculum and use of technology provide adequate "contextual support" (p.742) that fulfills these psychological needs. That is, a non-user-friendly design that impedes students' sense of competency or an overreliance on rote exercises may impede the fulfillment of these psychological needs. In addition, "the quality of interactions with ...[peers] in the context of the activity can also influence the type of motivation adopted for this activity" (Roca and Gagné, 2008, p.1588). In setting curriculum goals, educators can set assist students in regulating more long-term personal goals and motivational orientations by providing opportunities for students to go beyond rote memorization of facts and to *applying* knowledge towards more cognitively complex tasks involving synthesis of knowledge (Bloom et al, 1956; Pascual, 2010) as well as more individual, student-centered purposes. Educators must carefully consider appropriate implementation of the curriculum and related technology as well as the overall classroom atmosphere in meeting students' academic needs and thereby engaging them within the learning process.

Thus, educators are responsible for fostering motivation and engagement within their students by helping students develop in their ability to regulate their own learning and learning

goals. In certain circumstances students themselves can regulate their own long-term motivation orientations, but educators usually play at least some role in this process. Self-Determination Theory suggests that students who demonstrate *amotivation* will not be likely to learn. In addition, in students who demonstrate *intrinsic motivation*, while being engaged in the short-term may easily lose engagement with an activity if the educator and/or the students themselves never integrate this short-term focus upon an interesting activity into longer-term learning goals (Deci, Vallerand, Pelletier and Ryan, 1991). Furthermore, students who demonstrate lower-levels of *external motivation*, motivation regulated mostly by outside reward and/or punishment, are also likely to lose motivation if this motivation is not integrated into more self-directed long-term goals (Ryan and Deci, 2000, p. 72). In contrast, *integrated regulation* is probably the orientation which best embodies more continuous, personalized, long-term attitudes and this orientation can be compared to the concept of *metacognition* as well as metacognitive practices. While *intrinsic motivation* only connotes action motivated by enjoyment within a situation, *integrated regulation* refers to the integration of tasks that may or may not be enjoyable to an individual into that particular individual's behavior for the sake of a goal that this individual has identified to be personally important and meaningful. Individuals demonstrating *integrated regulation* are, over the long-term, more likely to be conscious of their own progress, their own individual learning preferences and their own effective learning strategies. Educators should carefully consider factors related to student engagement and learning outcomes when designing curriculum and integrating technology into this curriculum. These motivational orientations that may be demonstrated by learners are outlined within table 2-2.

Table 2-2: Classification of Motivational Orientations According to Self-Determination Theory (Deci and Ryan, 1985)

Category of motivational orientation	**Definition**	**Corresponding "Regulatory Style" (Ryan and Deci, 2000)**
amotivation,	perceived lack of connection between tasks and outcomes, the least self-determined orientation	*non-regulation*
extrinsic motivation	motivation regulated by outside reward and/or punishment	*external regulation* regulation based upon conditions similar to operant conditioning (Skinner, 1963). *introjected regulation* "behaviors are performed to avoid guilt or anxiety or to attain ego enhancements such as pride" (Ryan and Deci, 2000, p. 72) *identified regulation* "conscious valuing of a behavioral goal or regulation" (Ryan and Deci, 2000, p. 73) *integrated regulation* "identified regulations are fully assimilated to the self" (Ryan and Deci, 2000, p. 73)
intrinsic motivation	motivation driven by inherent interest or appeal of the task	*intrinsic regulation*

Educators, including language educators, employ *metacognitive processes* within instruction in order to engage students and facilitate higher-order learning. Researchers associate m*etacognition ,* a concept similar to *integrated regulation* (Ryan and Deci, 2000, p. 73) with reflection, executive control, independence and conscientiousness; they have described it as "a

cycle of *self-judgment, self-monitoring* and *self-evaluation* (Zimmerman, 2002), and "one's knowledge concerning one's own cognitive processes" (Flavell, 1976). Students demonstrating metacognition are likely to be conscious of their own progress, their own individual learning preferences and their own effective learning strategies (Zimmerman, 2002). "Cultivating metacognition" involves helping students "select learning strategies that they believe will help them understand make meaning of the information they encounter" (Lattuca and Stark, 2011, p. 195). Educators who facilitate metacognition may require a time investment "at the expense of subject-matter coverage"; nevertheless, "the research literature consistently shows that stressing content coverage while neglecting to encourage awareness of what is being learned, why, and how, encourages surface processing and diminishes learning." Thus, reducing the number of concepts taught in class in order to spend more time facilitating reflection and understanding the connections between key ideas is often a worthwhile instructional strategy (Lattuca and Stark, 2011, p. 221) in many contexts, including language classrooms.

Metacognition is important within the process of attaining communicative competence (CC). Indeed, the component of *strategic competence* within CC connotes processes related to metacognitive processes. Strategic competence involves *compensatory strategies* (Canale and Swain, 1980), in for example, repairing misunderstandings. However, strategic competence also involves *self-monitoring strategies*, involving, for example, "correcting or changing something in one's own speech" and *rephrasing* (Celce-Mucia, et al, 1995, p.27). Learners employ metacognitive strategies to successfully complete complex speaking tasks (Goh and Burns, 2012). Within the process of acquiring CC, metacognitive knowledge can be conceived as being composed of *person knowledge*, or recognition of one's strengths and weaknesses as speaker; as well as *task knowledge*, and *strategic knowledge* (Flavell, 1979, p.907). Strategic competence is intertwined with the other elements of CC, *socio-cultural competence, linguistic*

competence and *discourse competence* and allows these other components to work effectively (Celce Murcia, p.10). Hence, concept of *strategic competence* and *metacognition* are inherently essential parts of the definition of CC.

It is useful to note different conceptualizations of metacognition within both educational research as well as general psychological research; such distinctions may connote more sophisticated degrees of metacognition. While educational researchers conceptualize metacognition as reflection and "thinking about thinking," (e.g. Samuelson, 1982) psychologists might expound upon this definition to include not only experiences and observations of oneself but also shifting perspectives to reflect on "others' mental states" (Frith and Frith, 2012, p.289). Beyond the definition of metacognition commonly used within educational research, this psychology-based definition involves individuals considering how others might perceive their actions; thus, this conceptualization of metacognition, or *mentalizing* (p.289) may require a greater level of insight and generalization across domains. This level of metacognition is often experienced in social situation, such as within the context of an individual being observed by an audience or within the context of a child's interaction with a parent (Sharp and Fonagy, 2008). Conceptualizations of metacognition may vary, for example, within the fields of education and psychology, and these definitions may connote different degrees of cognitive processing.

Metacognition, Spoken Discourse and Critical Thinking

Research suggests that classroom discourse strategies are linked to the processes of metacognition and critical thinking (Reznitskaya et al, 2001; Kramarski and Mevarech, 2003; Mercer, 2004; Mercer et al, 2004). Reznitskaya et al. (2001) studied the effect of "collaborative reasoning" discussions in which formal "argument devices" were used to model "reasoned discourse" (p. 161). These devices included "*Other people might say…"* as well as "*"Some*

people may disagree because…" (p.161). The researchers found that in comparison to other groups of students, students within this particular treatment group demonstrated a significantly greater number of instances of formal argumentation, "greater number of arguments, counterarguments, rebuttals, uses of formal argument devices, and references to text information" within subsequent written argumentative essays (p.171). Discourse strategies within the context of metacognitive strategies are particularly prevalent within research on science and mathematics education (Mercer et al, 2004; Kramarski and Mevarech 2003). Kramarski and Mevarech discuss the importance of logic-based discourse to guide higher-order thinking and metacognitive strategies within mathematics classrooms. Within their study of junior high school mathematics students, the researchers found that students who were explicitly taught particular methods of discourse and lines of questioning outperformed their peers who were not taught using these particular discourse-based modes of instruction (p.299). Researchers have demonstrated a link between discourse and metacognitive processes and higher-order thinking; nevertheless, within the context of language teaching, research seems to still be in short supply.

Metacognition and Language Learning Modalities

It is important to consider the relationship between metacognitive processes and learning modalities, that is, language production modalities. In her study of adult English as Additional Language (ESOL) learners, Huang (2010) found that within the context of reflecting upon student performance, use of particular different language production modalities proved more effective than others in promoting self-reported metacognitive behaviors. In comparison to a control group, which was allowed to reflect in any way its members preferred, Huang found that learners who reflected through individual writing tasks, for example, journal writing, as well as

group interactions exemplified a significantly greater degree of metacognitive behaviors according to a survey inventory completed by students (p.251). Huang found that students who engaged in "group spoken interactions" as a means to reflect also reported a significantly greater degree of metacognitive behaviors according to a survey inventory completed by students. In contrast, learners who reflected upon their learning by speaking individually did not exhibit a significantly greater degree of self-reported metacognitive strategies when compared with the control group. In addition, Huang reported that *social strategies* were significantly correlated with oral language production scores, but metacognitive strategies were significantly negatively correlated with oral production scores (p.252). The author writes: "One may postulate that perhaps too much thinking may have contributed to the metacognitive strategies' negative effect on oral production performance, especially among less advanced learners" (p.254): The participants within the study were "intermediate" learners. Language educators should promote metacognitive processes within their classrooms to facilitate CC, but also consider factors such as the modality of reflection and the proficiency level of students.

Computer-Assisted Language Learning (CALL)

Educators value computer-assisted language learning (CALL)[5] because of the

[5] CALL involves, but is not limited to computers, digital recorders and microphones, computer drill exercises, communication technologies such as Skype voice protocol and interactive multimedia presentations intended to promote vocabulary acquisition and listening skills. As a result of the growth in media technology, including information and communication technology (ICT) involving computers, mobile devices, and software including course management systems, within the past 15 years, important changes with regards to efficacy and efficiency in the delivery of curriculum and instruction have taken place. This is apparent when one considers improvements in the availability of online research materials, online course management systems / virtual learning environments, and distance learning options. Moreover, due to improvements in ICT, often within practices of *blended learning*, or integrating face-to-face instruction, online education, and "flipped" classroom practices, the past few years have witnessed a rise in instructional innovations intended to improve the quality of course content, promote student interaction, and facilitate student reflection and "critical thinking and higher-order learning" (Garrison and Kanuka, 2004, p.98). CALL provides educators with many opportunities to provide more dynamic and interactive

interactivity it offers to classrooms; CALL has the potential to facilitate conditions prescribed by the Output Hypothesis (Swain, 1993) and the Interaction Hypothesis (Long, 1996). Educators can use multimedia, for example, videos and multimedia dictionaries (Di Carlo, 1994) in order to facilitate *comprehensible input* (Krashen, 1982). Instructors must provide students with abundant linguistic input, either in the form of teacher-centered or student-centered instruction, within the early stages of instruction to allow for the establishment of *learning task* (Plass and Jones 2005). Linguistic *input* must be appropriately balanced between the verbal and pictorial channels of sensory memory and apperception (Plass and Jones, p.471), which is "the process of selecting words and pictures to support interaction and thus attain comprehension of the material" (p.483). This balance of verbal and pictorial input is particularly useful in avoiding overload of students' working memories and thus allows students to expend mental energies into "mentally organizing [the input / material] into a coherent cognitive structure" (Mayer and Moreno, 2003 p.43). Use of CALL is compatible and complementary with many important concepts in the field of second language acquisition, such as the Interaction Hypothesis and Output Hypothesis. Interaction Hypothesis and Output Hypothesis seem to validate many applications of CALL as sound practice.

CALL has the potential to enhance student engagement and to promote higher-level thinking in students. Students engaged in computer-mediated discussion exhibit a more equitable participation (Warschauer, 1995) and are more motivated to improve communication skills (Blake, 2000, p.130). Computer-mediated communication (CMC) allows language learners to "feel freer to suggest a new topic, follow up on someone else's idea, or request more

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learning activities and assessments for students.

information" (Chun, 1994, p.17) and provides "more opportunities [for learners] to produce syntactically complex language" (Sotillo, 2000, p.82). The participation patterns among students within CMC-mediated environments often either promote or discourage *strategic strategies* and/or *discourse strategies* (Canale and Swain, 1980) essential to the development of CC. Students using CMC are more likely to use useful discourse markers and strategies, including those in the latter study consisting of appropriate *comprehension checks, clarification checks* and *confirmation checks* (Lee, 2001, p.236-7). Language learners who integrate CALL in their learning often produce language that is significantly[6] "lexically and syntactically more formal and complex" for example, as per transcript analyses (Warschauer, 1995 p.2). That is, although language within CMC may exemplify the same functions as face-to-face discussions, the language more closely approximates written language in its complexity, sophistication and formality (Warschauer, 1995). CALL has the potential to improve the quality of discourse within classrooms and enhance student engagement.

VoiceThread

Both treatment conditions within this study focuses upon student use of VoiceThread, a commercial web-based media platform and mobile application. VoiceThread allows users with a site license to easily record and/or upload a variety of media files as well as to securely share these files to a variety of users and have the opportunity to asynchronously discuss these media files. A degree of media annotation and/or commentary is also possible. Thus, although the platform itself seems to be designed for the purpose of asynchronous discussion (indeed the most

[6] Payne and Whitney (2002) found that an experimental treatment consisting in regular engagement in synchronous chat room discussion lead to a significant differences between pre-term and post-term scores on a 50-point oral proficiency test between treatment and control groups ($p < .05$).

common use of VoiceThread involves asynchronous discussion), VoiceThread is flexible in its capabilities. That is, beyond, asynchronous discussion other innovative practices are possible using this platform. For example, instructors and/or students can create PowerPoint presentations screencasts to be conveniently shared with multiple users. Other possible uses include reviewing and/or peer-reviewing of video performances and well as students peer-reviewing of written assignments and/or Power Points. VoiceThread is a versatile learning tool.

VoiceThread LLC as a company seems to have expanded rapidly as a company and it seems to exert greater and greater influence upon academic research. Steve Muth and Ben Papell started VoiceThread LLC in 2007 in Boca Raton, Florida, USA (Andelman, 2009). Muth and Papell were dissatisfied with the choice of technologies available to the public at the time. Since 2007 the company has expanded rapidly in its entrance into site licenses with more than 30 institutions of higher education including Columbia University, Johns Hopkins University and University of North Carolina – Chapel Hill (VoiceThread, 2016). A Google Scholar search of VoiceThread yields hundreds of peer-reviewed articles written about the tool. Perhaps academics within the field of child literacy (Fantozzi, 2012; Gillis et al, 2012) have written the most articles about VoiceThread. Nevertheless, researchers within fields ranging from nursing education (for example, Harris, 2011; Price et al. 2013) to teacher education (for example, Archambault et al, 2010; Dooly and Sadler, 2013) have also contributed to literature on VoiceThread. Despite this proliferation of articles written about VoiceThread, much of literature is still nascent and expositional in nature; more experimental research on VoiceThread, including within the field of language acquisition, seems to be needed.

VoiceThread offers institutions and individual users many benefits. The platform seems highly user-friendly. The company offers a free version with limited functionalities. It can be

argued that it creates an active online learning experience; it can be used as a collaborative tool. The platform offers a built-in web cam recording function and is also somewhat mobile-friendly. Multiple files and multiple types of media can be uploaded onto one project. VoiceThread users can upload many major media file types onto the online platform. With an institutional / higher education, site license, VoiceThread media files can be embedded on a webpage or learning management system (LMS). VoiceThread has compatibility agreements with most major LMS systems including Blackboard, Canvas, Moodle, Sakai, ANGEL and so forth (VoiceThread, 2016). Most of VoiceThread's functions are offered free to users. An institutional site license also allows students and instructors to securely share their media files with each other. In order to access these files within the VoiceThread website, an institutional log in, involving an institutional user name and password, is required. Thus, compared to sharing media files on, say, YouTube, VoiceThread offers a greater sense of privacy and file security at a relatively low cost to users. An alternative online media platform, such as YouTube, was ultimately not used within this study due to these concerns related to information privacy and security. That is, university information technology policies discourage uploading student work onto commercial websites such as YouTube which may offer fewer privacy controls and protections.[7] At the institution where the research was conducted, recently the university IT department replaced access to the built-in default recording system within the university's LMS with an institutionally-licensed access to VoiceThread. Thus, VoiceThread was widely available on campus. VoiceThread offers institutions and individual users many conveniences and is generally easy to access and use at a relatively low cost.

Despite these advantages, there are several drawbacks of VoiceThread, particularly with

[7] In addition, the Zaption (Zapton, 2016) online platform relies on access to videos uploaded onto YouTube.

regards to its annotation capabilities. Although VoiceThread is compatible with major media file types, the free version does not afford secure sharing uploading larger video file formats. In general large media files can overload the website; file conversion may be necessary. AVI video files seem to work well even for large files. For conversion of larger files, a good file converter, for example, Kigo Video Converter (Kigosoft, 2016), can be used. At this time, it is not possible to use text annotations on videos as is possible using other online multimedia platforms such as YouTube annotations (Google Inc., 2016) and Zaption (Zaption, 2016). Thus, another drawback of VoiceThread is its limited annotation capability. This annotation capacity seems to be designed for asynchronous discussions and not for in-depth individual reflections upon personal video recordings. For example, the design of the slider bar makes it a bit confusing to access a large number of annotations. The VoiceThread platform is promoted and used primarily for the purpose of asynchronous chatting and not for annotations. In addition, VoiceThread does not afford contiguous text-based comments to be created along a slider bar of the original audio or video file as YouTube does. The ability to annotate videos using text instead of video would seemingly be more consistent with Clark and Mayer's *modality principle* related to e-learning and multimedia and may lead to more effective learning. That is, the ability to annotate videos using text instead of video may be less likely to overload the visual channel of the learner's cognitive load (Clark and Mayer, 2011 p.100). Despite these drawbacks related to media annotations, the researcher decided it would be worthwhile to investigate the potential of relatively user-friendly video-based media annotations within the VoiceThread platform to facilitate student metacognition and speaking skills.

Again, despite a generally rising interest in VoiceThread, most literature related to VoiceThread, including research within the field of language acquisition, is still nascent and expositional in nature. More experimental research on VoiceThread, including within the field of

language acquisition, seems to be needed. In an exploratory case study involving both Likert-scale survey items and open-ended questions, Gao and Zhang (2012) found mixed opinions about VoiceThread as a means to facilitate asynchronous discussion among the arts students in their case study. The authors cited design features that impeded in-depth discussion. Augustsson (2010) in his qualitative study of university social psychology students analyzing videos of group presentations on VoiceThread found that this media platform demonstrated benefits of *task ownership* and promotion of reflection and *self-awareness* (p.204). These research-based results seem to offer mixed results in terms of use of VoiceThread. Nevertheless, in terms of answering the question of whether VoiceThread would be useful as a means to promote metacognitive strategies related to communicative competence, for example, when integrated within ePortfolio assessment, further research seems to be necessary although some insight may be gained from other CALL-related research.

Cognitive Theory of Multimedia Learning and Related Design Principles

When implementing multimedia platforms such as VoiceThread, it is important to consider salient design principles related to the technology. Educators and instructional designers follow certain principles of multimedia design to design e-learning modules that allow for efficient psychological processing of inputs such as graphics, text and audio within the e-learning module. For example, Clark and Mayer's *modality principle* related to eLearning and multimedia states that "people have separate information processing channels for visual / pictoral processing and auditory / verbal processing. When learners are given concurrent graphics and on-screen text, both must be initially processed in the visual / pictoral channel...even though the information is presented, learners may not be able to adequately attend to all of it because their visual channels become overloaded" (Clark and Mayer, 2011 p.105). Therefore, it is important

to balance modality of inputs within eLearning, by for example, narrating graphic animations through audio instead of text. Thus, it might be the case that text-based annotations versus video annotations may be well suited to eLearning instruction and less likely to overload the visual channel of the learner's cognitive channel of processing (Clark and Mayer, p.100). Although this principle holds for most eLearning contexts, it is important to note possible exceptions exist relating to "when the learner is not a native speaker of the language of instruction" (Clark and Mayer, p.113) , and, presumably, within use of subtitles or closed captions for language learners or people with hearing-related disabilities. In addition, although cognitive theories of multimedia warn against overloading a one particular channel, research within this area does not seem to include research on interactive video-related activities which involve, to varying extent, both visual and audio channels or processing. Therefore, the issue of the modality principle with regards to use of videos and video-based commentaries is one that seems to warrant further research.

Another principle of multimedia design is the *contiguity principle* (Clark and Mayer, p. 77). This principle states that key elements within eLearning contexts should be aligned in close proximity. For example, printed words that explain a particular graphic or graphic animation should be placed near or directly next to its corresponding graphic. According to the contiguity principle, eLearning designers should also seek to place feedback on questions within the same screen, not within a separate results screen (p.83). In addition, linked pop-up windows that obscure the main lesson screen should be avoided whenever possible (p.84). The design of the adjacent *picture-in-picture* (PIP) video commentaries embedded within a main video screen within VoiceThread seems to adhere to the contiguity principle and seems to merit research.

Portfolios and ePortfolios

The use of VoiceThread, as an approximate form of ePortfolios, is integrated within both the experimental groups within this research. The use of portfolios and ePortfolios offers numerous advantages for learners and educators, for example, as a form of authentic assessment. Portfolios, serving the purpose of representing a long-term record of students' progress (Hancock, 1994), represent "a purposeful collection of students' work that tells the story of the student's efforts, progress and achievement in a given areas" (Arter and Spandel, 1992, p. 36) and are thus at the forefront of alternative assessment approaches (Hamp-Lyons, 1996). Educators and researchers value represents a more accurate representation of students' abilities. Authentic assessment represents real-world type EFL-student learning, achievement, motivation, and attitude in classroom activities (O'Malley and Valdez Pierce, 1996). Educators and researchers often consider this form of assessment as particularly useful for the assessment of second language learners since it represents a shift from standardized testing (Genesee & Upshur, 1996; Goodman, Goodman & Hood, 1989; Hancock, 1994) and represent a broader measure of what students can do. Educators and researchers often have claimed traditional assessments, including timed writings, to be discriminatory against non-native writers since these timed assessments may not represent the capabilities of non-native writers (Hancock, Hamp-Lyons and Condon, 2000). Portfolios and ePortfolios offer advantages as a form of authentic assessment.

In addition, portfolios may promote metacognition (Barbera, 2009; Hamp-Lyons and Condon, 1993) by providing opportunities to reflect on academic-related processes, as well as enhanced student engagement. Keeping portfolios teaches learners to be responsible for

monitoring their own learning process, progress, and success (Glazor and Brown, 1993).[8] Use of porfolios, particularly ePortfolios, may serve the function as *shared assessments* between instructors and students and has the potential to reduce teachers' grading load since students participate in self-evaluation. Use of portfolios, particularly ePortfolios, is often listed among recommendations within the development plans of universities and other institutions (Knight, 2008; University of Kansas Retention and Timely Graduation Task Force Report, 2010 p.7) to increase student engagement and retention.

The use of ePortfolios offer numerous advantages over traditional paper-based portfolios. Unlike paper-based portfolios, ePortfolios are capable of storing a wide variety of media files (Cummins and Davesne, 2009). Use of ePortfolios represent a convenient way to distribute digital media. In order to most effectively implement ePortfolios, it is important to consider key principles and essential elements of the ePortfolios and the ePortfolio evaluation process. Cummins and Davesne (2009), in an exposition of ePortfolios within the context of second language assessment, recommend key elements used within this form of assessment including student choice over artifacts included in the portfolio as well as a *language biography*, a *language passport*, documenting student progress. Every European language portfolio passport

[8] There are multiple types of portfolios, including "best works" versus "process portfolios" (Díaz-Rico, 2008, p.84). Although attributes of these portfolios may not be exclusive to a particular type of portfolio, generally "best works portfolios" involve the learners selecting best examples of their work while "process portfolios" involve students documenting the developmental improvement in their work over a specific period of time. Gottlieb (1995) suggests a developmental scheme for considering the nature and purpose of portfolios. He uses the acronym CRADLE to designate six attributes of portfolio development—"collecting, reflecting, assessing, documenting, linking, and evaluating."

Hancock (1994) wrote that the portfolio may include examples of the learner's completion of tasks such as reports, (both oral and written), creative projects such as artwork, contributions to group projects, and student writing (e.g., essays, poems, and written homework). The items chosen for inclusion in the portfolio can be selected by the learner, the teacher, or both, depending on the instructor's purposes (1994). Moreover, use of portfolios can be viewed as a process promoting social constructivism and collaboration. That is, students are encouraged to use their teachers and classmates as resources to facilitate learning, while students taking tests are usually not allowed to do this.

is accompanied by a grid that summarizes descriptions of the *Common European Framework of Reference (CEF)* levels (Cummins and Davesne, 2009).[9] The language biography facilitates learners' involvement in planning, reflecting upon and assessing their learning process and progress; it encourages learners to state what they can do in each aspect of language learning. The language dossier consists of artifacts of L2 written and oral work using any medium (audio files, video files, links to personal Web sites, photos, movies, and so forth). In addition, it allows them to record professional certifications, for example, for translators and teachers. Assessment of artifacts within the language dossier may take place according to, for example, characteristics and Guidelines for the ACTFL Oral Proficiency Interview (OPI), which would reflect communicative competence. Educators and academics alike value the use of ePortfolios due to their suitability to a broad range of communicative performance tasks.

Despite these advantages, existing research on portfolios and ePortfolios is limited mostly to teacher preparation and professional training programs. This limited literature on ePortfolios yields mixed results regarding the effectiveness of ePortfolios. Within these professional training contexts, ePortfolios are often implemented within classroom settings for reasons related to standardization and accountability. Moreover, since perhaps the term "portfolio" connotes a composition of writings, studies of portfolio research have focused primarily upon writing skills. Thus, the few studies of ePortfolio implementation within language classrooms involve investigation of the development of writing skills. With regards to the actual effectiveness of

[9] "*The Passport section provides an overview of the individual's proficiency in different languages at a given point in time, defined in terms of skills and the common reference levels of the Common European Framework of Reference (CEF); it records formal qualifications and describes language competencies and significant language and intercultural learning experiences; it includes information on partial and specific competences; it allows for self-assessment, teacher assessment, and assessment by educational institutions and examination boards; and it requires that information entered in the Passport states on what basis, when, and by whom the assessment was carried out*" (Cummins and Davesne, 2009).

ePortfolios, again, studies within language teaching contexts is sparse. Much of the current literature is lacking in many respects; for example, the research may rely entirely upon qualitative case studies or rely entirely upon perceptual research in the form of Likert-scale-type surveys without attempting to measure the actual effectiveness of the portfolios in the development of students' language abilities. Hung (2006), found within his Likert scale survey data that students felt they benefitted from the use of portfolios. Nevertheless, follow-up qualitative studies showed that there were many challenges in implementing these portfolios with the English language learners who served as participants in his study. In a study of an English as a Foreign language course taught via distance education, Baturaya and Daloglu (2010) found that use of ePortfolios did not significantly impact learning as according to pre and post-test writing achievement scores. These authors did, however, argue that students "benefited from and enjoyed keeping a portfolio" (p.413). This evidence from research lacks strong conclusions about the role and effectiveness of ePortfolios and reflects a general lack of research to directly assess the usefulness of ePortfolios with regards to student learning. This is particularly true with regards to consideration of ePortfolios integrating student video and/or audio media files. That is, ePortfolio literature focuses mainly upon the assessment of written language, not spoken language (Barbera, 2009; Hamp-Lyons and Condon, 1993). The current literature focuses on portfolios in the assessment of written expositional or didactic forms of language; this research sought to expand this set of literature to include spoken language use within a broader variety of contexts, including use of ePortfolios within the VoiceThread media platform.

Audio Blogs

Audio blogs can be used as a technological intervention that can approximate the use of ePortfolios; the literature on audio blogs adds credence to the premise of this research study.

Beyond the quite limited range of studies on ePortfolios within language teaching situations, looking at use of media platforms used to facilitate oral communicative abilities within students, it is worth considering the topic of "audio blogs" used in conjunction with language learning. Shih (2010) and Sun (2012) found in their respective studies that students perceived audio blogs to be useful for learning. A potentially-more informative, empirical study by Tan and Tan (2010), which studied learners of Chinese, found audio blogs had the potential to facilitate metacognitive strategies. Within the treatment group, Chinese language "students [engaged] in metacognitive reflection of their oral performances" (p.1075). Significant differences were found between pretest scores and posttest scores on a Chinese language proficiency test ($p=.02$). Unfortunately, a control group was not used to add greater credibility to the study. Moreover, follow-up qualitative insights explaining exactly why this significance existed were not included. Audio blogs seem to hold promise for the teaching of communicative language skills.

Digital Annotations

With the advent of new technologies, digital annotations allow for media users to analyze and reflect upon media files that were either created by others or themselves. Accordingly, digital annotations are teacher-created or student-created digital comments which represent an extra layer of meaning, often of a reflective nature, upon a collection of media artifacts. Use of digital annotations can take the form of inserted text, recorded sound, or even videos. These annotations can be left within individual platforms, such as ePortfolios , or within media-enhanced forums affording discussion. Digital annotations seem to hold potential in facilitating metacognitive awareness and reflection within CALL, although there is a lack of research investigating effectiveness of these uses of digital annotations. This lack of research is perhaps in part due to the relatively recent advent of digital annotation technologies into mainstream

technological accessibility. Howard (2012) in a study of pre-service teachers found that collaborative video annotations produced the most higher-order thinking when study participants were allowed to model discourse within pre-existing embedded annotations within the videos. Lemon et al. (2013), in a survey of chiropractic, radiology, legal, and educational students in a general higher education setting found high satisfaction rates among general users of the digital Media Annotation Tool (MAT) used to annotate lecture videos. Digital annotations, particularly when used in conjunction with ePortfolios and other forms of CALL, seem to hold great promise; further research focusing on this technology seems to be in order.

Transactional Distance and Social Presence

Within the context of the aforementioned concepts of computer-mediated communication, *interaction* (Long, 1996) and *motivation*, particularly *learner autonomy* (Ryan and Deci, 2000), it is useful to consider the concepts of "transactional distance" (Moore, 1996) and "social presence" (Short et al, 1976). Social presence can be defined as "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships …" (Kreijns et al, 2002, from Short, Williams, & Christie, 1976, p. 65). Similarly, *transactional distance* can be defined as the psychological or cognitive space between instructors and students within the context of distance or blended learning educational contexts (Garrison, Cleveland-Innes, 2005, p.134). According to Moore's Theory of Transactional Distance, in order to reduce the psychological distance between students and the instructor and thus create a more beneficial learning environment, three factors must be considered: dialogue, or interaction between students and instructors and between students; the structure of the online or blended course; and learner autonomy (Moore, 1993, p. 22). Within the context of language learning, the concepts of *social presence* and *transactional distance* also seem salient. Language learning often requires a greater

degree of instructor feedback than within other domains of learning. Therefore, in addition to providing opportunities for communication between students, the psychological and/or cognitive availability of the instructor via either face-to-face or via computer mediated communication (CMC) would have a great impact upon student learning.

Design Based Research (DBR)

The current research arguably represents an example of design-based research (DBR). DBR is a form of research concerned with the potential of instruction design upon student learning (The Design-Based Research Collective, 2003). Compared to participation in more traditional, de-contextualized forms of research, educators involved in DBR research, similar to certain types of action research, may have a greater stake in the outcome of their research in the sense that the research will be used to directly benefit their instruction and their students. At the same time, DBR is often more student-centered research and often seems to promote more student-centered pedagogies including constructivist pedagogies. Use of VoiceThread can be viewed as an example of an implementation of a form of online ePortfolio system. This form of use of student ePortfolios may be used not only by various stakeholders, including educators and administrators, to promote continuous feedback upon the research study, student accountability of students in reaching outcomes, credibility of the research design, but perhaps more importantly, to promote metacognition among students and reflexivity among educators and researchers alike. These concepts seem congruent to the need for DBR to be flexible, interactive and dynamic (The Design-Based Research Collective, 2003).

CHAPTER III: METHODS

A Mixed Methods Approach

This research investigated whether the educational intervention of media annotations integrated with the VoiceThread media platform could facilitate communicative speaking skills development among the English language learners within the researcher-instructor's study. The researcher-instructor theorized that students' experiences reflecting upon their work would enhance the metacognitive skills and in turn improve their overall communicative speaking skills as measured by appropriate use of discourse markers. Although both treatment groups within this study used VoiceThread as a platform approximating the use of an ePortfolio or audio blog, only students within one of these treatments groups, treatment group 2, used VoiceThread's media annotation to analyze and reflect upon their recorded speaking performances. The researcher theorized that through this process of reflection, students would demonstrate more appropriate discourse markers within their speaking.

The researcher employed both quantitative and qualitative research methods in order to provide both experimental and descriptive data. This research design followed mixed methods "explanatory sequential design" (Creswell, 2014, p.229) involving quantitative data collection followed up with qualitative data collection, a QUAN➔qual research model (p. 229). The dominant quantitative component of the study comprised of both treatment sections each participating in the same beginning-of-term and end-of-term speaking assessment: a "repeated measures" quasi-experimental design (Howell, 2011 p.484). The experiment within this dominant quantitative component represents an example of quasi-experimental design rather than pure experimental design due to lack of factors such as randomized assignments to control and

treatment groups (Gribbons and Herman, 1997). Despite shortcomings within the design model, the researcher felt that this design model adequately attended to the purposes of the research.

Within the design process, the researcher had to make several important decisions related to procedure. These decisions generally support the reliability and validity of this study. The first, main data collection phrase of research involved quantitative data: In order to measure student's appropriate use of discourse markers within speech, the researcher collected data in the form of digital recordings yielded from a Voice Over Internet protocol (VoIP) system-based speaking test. These audio recordings were transcribed and coded to examine frequency of discourse markers used. After this first data collection phrase of research, a second phrase involving qualitative interviewing was integrated within the research. Within both of these two phrases of research, the researcher's own classroom within his department served as both the treatment cohorts over the course of multiple academic terms. In order to avoid possible issues of validity related to students, for example, being more motivated within a particular academic year compared to a different academic year, both the first and second treatment sections were staggered between different academic terms and academic years. These important decisions related to procedure support the reliability and validity of this study.

Quantitative Methods

Several quantitative research questions guided this design of this repeated measures study. The first of this set of research questions sought to understand whether use of digital media annotations mediated within VoiceThread can improve students' ability to use discourse markers appropriately in a general sense. Subsequent research questions sought to understand whether digital media annotations mediated within VoiceThread could improve students' ability to use discourse markers appropriately within the more specific contexts of academic discussions

and debates, didactic presentations as well as negotiations and other pragmatic contexts. Accordingly, the quantitative research design included an independent variable represented by a treatment involving the use of digital media annotations mediated within VoiceThread used to promote students' communicative speaking skills. The dependent variable was represented by the number of appropriate discourse markers within test transcripts. In order to address the five hypotheses within this study, the researcher counted (1) all discourse markers used within the testing instrument in its entirety as well as discourses used within particular contexts: (2) discourse markers most appropriate within conversation and/or discussion contexts (3) discourse markers most appropriate within *didactic* speaking tasks, (4) discourse markers most appropriate within negotiations and other pragmatic contexts, and (5) *functional discourse markers*. The five quantitative research hypotheses within this study guided the fundamental research design of this study.

Several details relating to this quantitative component of this study affected the reliability and validity of this study. Both the first treatment group and the second treatment group were given two tests constructed by the researcher during the course of an academic term. Because the instructor / researcher did not randomly select his students within the first and second treatment groups, the quantitative study would be classified as one that was *quasi-experimental* in design (Gribbons and Herman, 1997). One speaking test was be given at the start of each academic term and the other test was given towards the end of the term. Transcription and coding of recordings allowed the researcher to determine whether the second treatment condition, involving use of digital annotations, facilitated appropriate use of a greater number of discourse markers within the test recordings. A 2X2 Analysis of Variance was used to compare results related to the two levels of time and treatment group (time X treatment group); this ANOVA involved a two-tailed test. A significant quantitative result, for example, in the form of

a significant interaction effect, would have demonstrated the effectiveness of digital annotations in the promotion of useful discourse markers within communicative speech. These multiple details related to the design of the study were important to the validity and reliability of this study.

Qualitative Methods

In addition to quantitative methods, this study integrated qualitative methods in order to provide explanatory, descriptive data to support the quantitative component of the research. This qualitative research phase served to explain either the rejection of the hypothesis or failure to reject the hypothesis within the prior quantitative phrase of this study and to provide context. A qualitative follow-up survey was administered to 15 students who participated within the second treatment group. After transcribing these 15 interviews, the researcher employed thematic or "open coding" (Corbin and Strauss, 2008 p.195) in order to identify persistent themes within the transcription. Subsequently, the researcher used *axial coding* (Priest, Roberts, and Woods, 2002 p.34) and further synthesize commonalities identified within this set of transcriptions. This follow-up research examined student attitudes towards using this technology and how students felt it either contributed or failed to contribute to their growth as language learners. The qualitative research within this study exists as an example of a *basic interpretive qualitative study* (Merriam, 2002, p. 6). Through interviews, the researcher investigated patterns that would explain the particular process involved in practicing appropriate use of discourse within a technology-rich environment. In addition to seeking to understand the processes involved in learning, this study sought to understand learners' perceptions of the learning processes and any barrier related to either technology or non-mediated instruction that either contributed or inhibited learning.

Research Setting

The research site, which was be the university-based language program which teaches English for Speakers of Other Languages (ESOL) where the researcher currently teaches, offered the research study a degree of consistency across classes involved in the study. This ESOL center has a long history of offering intensive English classes to international students studying at the university as well as permanent U.S. residents requiring language support. On average, 250-300 students attend language classes during any given academic term. Most students enrolling in language classes are from East Asian or Middle Eastern countries although a diversity of nationalities, including Brazil, China, India, Korea, Kuwait, Saudi Arabia and Japan exists. This university-based ESOL center offers both short-term programs as well as a system of five proficiency-based levels of instruction to assist students who need to fulfill their English language requirements that are prerequisite to being able to take a full enrollment of classes at the university. Both the first and second treatment group conditions took place within the university classrooms where the language classes within the study normally meet. The ESOL center which served as the setting for this research provided a degree of consistency among participants within the first and second treatment groups of this research.

Participants within this research were drawn from the two most advanced levels of instruction at the ESOL center. That is, each of the classes with both the first and second treatment groups comprised of students within the two most advanced levels of listening and speaking instruction at the ESOL center, the upper-intermediate level and advanced proficiency levels of students. All classes within this study met four days a week, with the exception of one class. This elective class met only once a week but spent its time exclusively practicing listening

and speaking skills.[10] Most of the classes within this research study met in a traditional classroom for three of these four meeting days.

The ESOL center afforded the resources, including the technology, which were necessary for this research. The classrooms where all but one of the classes met for three out of the four days per week that classes were scheduled were traditional classrooms. These traditional classrooms had an instructor computer console integrated with an overhead projection system as well as a document camera. For one day per week, these classes met in a mediated computer lab with one desktop computer available for each student with an internet connection. In addition to having computers available for each student, these computer labs also had the same instructor console integrated with a document camera and overhead projector that were available in the traditional classrooms. Each student computer was integrated with a headphone with a microphone as well as access to the commercial Voice Over Internet protocol (VoIP) system, SANS Sony Soloist and Sony Virtuoso Programs. This "fully digital" VoIP allows instructors to conveniently engage students in a variety of learning activities including the ability to pair students in conversations to be recorded as well as the ability for the instructor to create customized "Auto Comparative Recording (ACR) files" that provide students with an audio speaking prompt and conveniently records student responses into individual student files (SANS, 2014). The ESOL center and host university provided the technology that was necessary for this research.

The ESOL center and host university also provided access to an enhanced version of VoiceThread. Within this language classrooms at the ESOL center, VoiceThread, having the

[10] This class, an upper-intermediate to advanced - level elective course which focused on communicative speaking skills, met exclusively in the computer lab discussed later within the next paragraph.

advantage of being able to record both video and audio, a common means to record students. The university where the research took place had entered into a paid institutional license agreement with VoiceThread and over the course of the research. Subsequently, VoiceThread became the only internet-based recording system integrated within the virtual learning environment system.[11] Although a basic version of VoiceThread is available for free for anyone with an internet connection, this paid institutional site license version of VoiceThread offers advantages over the free version of the platform. For example, through entering into an institutional site license with VoiceThread, the host university within this research provided students to have the ability to log into their university VoiceThread account using their university username and password. The institutional site license with VoiceThread also affords "advanced security controls" which allow teachers and students to build e-mail-based contact lists within their platform and the ability to only share their recordings with individuals chosen within these contact lists (VoiceThread, 2016). As a result, there is a greater sense of privacy and security within VoiceThread than other internet-based platforms. The licensed version of VoiceThread provided by the ESOL center's host university was indispensable to this research.

Why a Control Group was not Used within this Study

The use of a control group was not used within this study for several interrelated reasons. The curriculum within this research study required an instructor, the researcher, who applies a somewhat-unique approach of teaching speaking skills involving the instruction of a variety of communicative speaking tasks, for example, role-plays, debates and discussions. This variety of

[11] Before this paid institutional license agreement with VoiceThread, a more basic internet-based audio recording system within the university's virtual learning environment was also available that was also accessible to both students and teachers.

instructional techniques are often credited to not only improving oral communication but also critical thinking skills (Kennedy, 2007; Richards 2005). The research also involved analysis of discourse markers within spoken communication. The researcher-instructor had difficulty recruiting other instructors to apply these more labor-intensive approach. Thus, the researcher-instructor was the only instructor in the research.

This difficulty in recruiting other instructors to participate in the research study also relates to the speaking-related objectives within the official curriculum handbook of the ESOL center. These speaking-related objectives focus mainly upon two skills sets: students being able to give formal didactic presentations, for example, in front of a classroom as well as students' being able to demonstrate clear pronunciation. Although ESOL Center instructors are given the freedom to teach skills sets beyond these two areas, formal assessment of academic discussions, debates, and role-plays is not required. Moreover, although the instruction of discourse markers within the context of didactic presentations is prescribed within the level five speaking objectives, discourse markers are not prescribed within the level four speaking objectives. For these reasons, at the outset of this research, it was difficult to recruit other teachers to take part in the communicative lessons required as part of this research. For this reason, attaining a sufficiently-large sample size took longer than initially expected since the researcher relied upon his own classes. Because academic discussions, debates, and role-plays were not required as key components of the speaking curriculum, it was not feasible to recruit other ESOL center instructors to allow their students to participate in research as control group participants. It was too difficult to require other instructors within the research to integrate the variety of communicative language lessons required for the research perhaps due to the fact that the lessons were unfamiliar to many instructors and/or too time-intensive to assess.

Because the researcher-instructor was the only instructor in the research, the time necessary to collect requisite data exceeded a year. It was difficult to collect a sufficiently large sample size within the course of a limited time frame for data collection. Including a control group would have lengthened the data collection phase of research to perhaps almost two years. Thus, participants within this research represented individuals within the two most advanced levels of instruction at the ESOL center and were taught by the researcher himself. The research did not integrate a control group due to factors relating to the somewhat unique approach of the researcher-instructor as well as time limitations within the data collection phrase.

Participants and Sampling

Within this quasi-experimental research, it was necessary for the researcher to recruit a sufficient number of students who, among multiple sections, would receive homogeneous treatment 1 or treatment 2 conditions. A power analysis suggested at least 30-45 students were needed within each group given a medium effect size of .50 (d=.5) in order to obtain statistical power at the recommended level of .80 (Cohen, 1992 p. 156). In other words, approximately 65-70 students in total would be needed. Otherwise, the study would have had insufficient power (Friendly, "Power Analysis for ANOVA Designs"). Because average class size at the ESOL Center averaged about 12 students per semester, multiple academic terms were necessary to collect data in order to obtain sufficient data. Ultimately, the researcher collected data for five academic terms; the study lasted over the course of five academic terms at the university: spring 2015, summer 2015, fall 2015, spring 2016, and summer 2016. At first, in order to expedite the process of data collection needed to represent 30-60 students, the researcher attempted to recruit other instructors to teach both students within both the first and second treatment group cohorts. The researcher found it difficult to achieve this goal due to the intensive nature of the particular

classroom lessons involved in the research. Again, it would have been complicated to coordinate with other instructors in providing a thoroughly consistent schedule of communicative lessons between instructors in terms of implementing these particular methods and requiring other teachers to assess objectives not explicitly required as part of the curriculum framework. In addition, having the same instructor teach both treatment 1 and treatment 2 groups potentially contribute to the validity of the experimental design (although it lengthened the data collection stage of the research). Within this quasi-experimental research, the researcher recruited a sufficient number of students and maintained consistent conditions within the first and second treatment groups.

It was necessary for the researcher to recruit students who represented a consistent proficiency level of speaking and listening skill. All participants within the study were students within upper immediate (level four) or advanced (level five) speaking and listening skills classes, in other words, within the two highest levels of instructional levels, at the ESOL Center. These two levels of students were chosen since they are more likely to be able to demonstrate discourse within more advanced forms of language use. Each student within each classroom with the first and second treatment groups were comparable in listening skills. For the first year of the study, the ESOL Center administration placed students into these classes based upon students' score within a particular range with regards to either the ESOL Center's proficiency test placement exam, which was discontinued at the end of 2015. After 2015, the ESOL Center's administration placed students into classes representing these two levels of proficiency based upon either their institutional TOEFL test scores (Educational Testing Service, 2016), their Cambridge Michigan Language Assessment (CaMLA) test scores CaMLA (Cambridge English Language Assessment, 2016) and/or their performances within prior ESOL Center classes. Thus, the sampling strategy utilized within this study represents an effort at administering "criterion-i sampling," (Palinkas et al, 2015, p. 535). That is, the researcher chose to only include a sample of students whose test

scores placed them within a certain range of an ESOL Center institutional proficiency test, the institutional TOEFL, or the, or performance within prior ESOL Center classes, in terms of listening skills. In addition to *criterion-i sampling* the sampling approach also exemplifies aspects of *convenience sampling* (Tashakkori and Teddlie, 1998 p.76). That is, the pool of participants were determined in part by the simple fact that they happened to be placed within the particular classroom section of the researcher-instructor. Ideally, it may have been preferable to limit sampling within this research to one particular proficiency level of students in a particular class, for example, either only within the upper-intermediate or only within the advanced level of classes at the ESOL center. This was not possible because, while the administration at the ESOL center was amenable in granting the request of the researcher-instructor to teach sections of the upper-intermediate and/or advanced levels of listening and speaking skills classes for multiple semesters, because of staffing needs, the administration needed the researcher-instructor to teach a more varied schedule. Nevertheless, the researcher recruited students representing a consistent proficiency level of speaking and listening skill.

Within this *quasi-experimental* survey which relied on *convenience sampling* as well as criterion sampling, the researcher attempted to control certain factors; however, certain sampling-related factors were beyond the control of the researcher. To the best of his ability, the instructor-researcher attempted to balance designation of treatment groups between the upper-intermediate and advanced proficiency levels of students; however, the researcher did not select which students would be in his classes, and thus, did not attempt to balance demographic factors such as gender and nationality between the first and second treatment groups. With respect to the balance of upper-intermediate and advanced proficiency levels of students, the schedule of groups according to conditions within the first and second treatment groups is listed within the Table 3-1 below:

Table 3-1: Quantitative Research Component: Participant Profiles

Academic Term	Description of Course	Treatment Condition	Number of students participating in study	Rate of participation/ data usage
Spring 2015	Advanced-level integrated language skills (reading, writing, listening and speaking)	Treatment Group 2	5	83.33%
Summer 2015	Upper-intermediate listening and speaking skills class	Treatment Group 2	6	50.00%
Fall 2015	Advanced listening and speaking skills class	Treatment Group 1	9	75.00%
Fall 2015	Advanced listening and speaking skills class	Treatment Group 1	18*	90.00%
Fall 2015	Upper-intermediate / Advanced elective course focusing on communicative speaking skills	Treatment Group 2	4	44.44%
Spring 2016	Advanced listening and speaking skills class	Treatment Group 2	5	38.46%
Spring 2016	Upper-intermediate listening and speaking skills class	Treatment Group 2	8	100.00%
Summer 2016	Advanced listening and speaking skills class	Treatment Group 2	3	30%
Summer 2016	Upper-intermediate listening and speaking skills class	Treatment Group 1	10	100%
Total			68	68%

*One participant's test data was not used within the research due to the participant recording an incorrect task at an incorrect time.

Again, with respect to demographics of the participants, no attempt was made to control for

either gender or nationality between the treatment group 1 and treatment group 2 within this study. Of the nine classes of students who were offered to participate in the study, 68 students signed the necessary consent form. 31 of these students were given the treatment 2 conditions involving use of digital annotations and 37 of the students were given the treatment 1 conditions. Of the total participants, approximately 48.5% were female and approximately 51.5% were male. 57.4% of participants were from East Asian countries such as the People's Republic of China, Japan, and Korea. 27.9% of participants were from Middle Eastern countries such as the Kingdom of Saudi Arabia, Kuwait and Turkey. Approximately 7.4% of participants were from Southeast Asian countries such as Indonesia, Thailand and Vietnam. Approximately 7.4% of students were from Latin American countries such as Brazil, Mexico and Paraguay. Although during many semesters, many students truly did not seem to want to participate, often times many sets of student data could not be used simply because students were absent on the day of the pre-test and/or the post-test. In addition, one participant's test data was not used within the research due to the participant recording an incorrect task at an incorrect time. Within this *quasi-experimental* survey which relied on *convenience sampling* as well as criterion sampling, the researcher attempted to control certain sampling-related factors; however, certain factors were beyond his control.

Treatment Conditions

To the best of his ability, the researcher maintained an overall consistent foundational curriculum related to communicative speaking skills among treatment 1 and treatment 2 groups. The researcher served as the instructor for all sections of treatment 1 groups as well as all sections of treatment 2 groups. Nevertheless, because seven different classes were involved

within this study, the overall curricula of these classes differed slightly since the study occurred in different classes within the upper-intermediate to advanced levels of the ESOL Center involved in this research. Although individual teachers may integrate different teaching approaches within their classrooms, the overall curricula related to communicative speaking skills between sections was uniform because it is based on the ESOL Center's specific departmental placement criteria. Both treatment 1 and treatment 2 class cohorts were given the same lessons involving communicative skills. These lessons included a lesson in initiating and maintaining social conversations, negotiating group work within a group project context and an academic debate. Within each academic term within the research, within both the first and second treatment groups, the instructor-researcher included instruction on use of effective discourse markers within the contexts of debates / academic discussions, didactic presentations as well as role-plays which simulate various academic and interpersonal situations students may encounter within their lives as university students. Within the activities within the course of the semester each class within both the first and second treatment groups participated in the following number of communicative practice lesson supported by instruction in discourse markers:

Table 3-2: Communicative Practice Lessons

Communicative practice lesson	**Approximate number of activities***	**Example Target Discourse Markers within Instruction**
Didactic (in-front-of-the-class) presentation	Two or three	*"Today, we're going to talk about…* (Frazer and Leeming, 2007 p. 5). (function: to establish / introduce a lecture topic)
Debate / discussion	Two or three	*I'm afraid I have to disagree..* (function: to diplomatically disagree / express an opposing opinion)
Role plays, including a role play on "negotiating group project situations"	One	*"Why don't we try… instead?"* (Derek Bok Center for Teaching and Learning). (function: to negotiate a different topic or work strategy)
Other role play, e.g. talking to instructors	Two or three	*Good morning / afternoon. My name is….from your….class. Could I ask you a question or two about…* (function: to open a conversation and request the instructor's attention)

*the communicative speaking elective class participated in a few extra communicative speaking lessons although this class met less frequently than the other classes.

These communicative language lessons were either derived from the ESOL Center's curricula, namely the *Lecture Ready* textbook series (Sarosy and Sherak 2006; Frazier and Leeming, 2007) or constructed upon similar ideas using original materials. These original materials were inspired by sources such as the Derek Bok Center for Teaching and Learning's online webpage as well as the textbooks *Academic Interactions: Communicating on Campus* (Feak, Reinhart, and Rohlck 2009) and *Academic Communication Skills: Conversation Strategies for International Graduate Students* (Huang, 2010). Whenever possible, the research-instructor strove to provide a cultural context to guide students through this communicative instruction. The core

pedagogical strategies taught within all communicative language lessons within all classes involved within treatment 1 and treatment 2 conditions were consistent.

VoiceThread was an integral component within both treatment group 1and treatment 2 group's assigned tasks; this media platform served as an approximate ePortfolio of recordings of speaking tasks within both the first and second treatment groups. The researcher chose as a media platform because it is was perceived to be more secure than other media sharing platforms, such as YouTube, since a university password is needed to access all files. This degree of security was made possible by the fact that the host university within the research had entered into a paid license agreement with VoiceThread in exchange for this level of privacy. Within both the first and second treatment group conditions, students were shown model videos of the communicative tasks they were asked to perform. These videos were created by the instructor-researcher. Within both the treatment group 1 and treatment group 2 experimental conditions, students were asked to record their debates and discussions as well as their role plays on VoiceThread using the built in video camera function. For the didactic presentations, students were video recorded by the instructor and later securely uploaded onto VoiceThread and shared with the respective individual students. Over the duration of the academic term, students accumulated multiple video recordings of their individual performances related to their communicative speaking-related assignments necessary to complete class assignments. VoiceThread's opening dashboard-like screen provided a convenient way for students to be able to review past recordings at their convenience. This opening screen approximates the function of many online media portfolios. Within this research study, the VoiceThread media platform served as an approximate ePortfolio within both treatment group 1 and treatment group 2 conditions.

Students within treatment group 2 used VoiceThread's more advanced functions. These students used VoiceThread's annotation functionality to reflect and comment upon their recordings of speaking performances. Within treatment group 2, in addition to serving as a convenient recording device, VoiceThread was used to create digital annotations corresponding to important segments of students' recordings. The instructor-researcher asked students to create one continuous video comment on the student's individual assignment recording on VoiceThread. Then, using the video annotation, they were instructed to leave at least three video annotations within their video recordings. Students were encouraged to pause the original video before while recording video annotations. Students analyzed and their effective or less-than-effective use of discourse markers within their digital media files. Students engaged in at least three analysis / reflection assignments during the course of the semester with regards to their media artifacts. Within each annotation / reflection assignment, students used the video comment function within VoiceThread to mark the positions within their media files where they used discourse markers appropriately. For example, students could create an annotation by recording:

- *"This is where I repaired a misunderstanding within the conversation by using [a particular discourse marker, e.g. 'Excuse me, could you repeat what you said?'"*
- *"This is where I provided a useful guiding overview of my presentation by stating: "Today, I will discuss….[main topic]. I will start by describing…. and then move onto discussing…."*

Students within treatment group 2 used VoiceThread's annotation functionality to reflect and comment upon their recordings of speaking performances.

VoiceThread's design was probably a key factor within this research for students in both

the treatment group 1 and the treatment group 2 conditions, but particularly with students within the treatment 2 group. Within the treatment 2 group, students' annotations took the form of a video annotation analogous to a TV commentary used during sporting broadcasts in which the commentator's face can be seen in an adjacent *picture-in-picture (PIP) video* (Marsden, et al, 1997). These audio annotations, unfortunately, did not afford contiguous comments to be created along a slider bar of the original audio or video file, a design similar to YouTube's annotation functionality (Google Inc., 2016), which offers advantages related to usability. Currently, the slider bar is only partly contiguous with the original video. This use of a more effectively-designed slider bar would have allowed both the student and instructor to more conveniently review annotations with the corresponding portions of the audio and video files that are of particular interest, for example, in terms of use of discourse markers within speech. Despite these drawbacks, VoiceThread provides an adequate annotation / screencasting / picture-in-picture (PIP) function. In addition, VoiceThread offers advantages in the relative greater sense of security: through entering into institutional site licenses with VoiceThread, universities to allow students to log into their university VoiceThread account using their university username and password. Table 3-3 provides an overview of VoiceThread's design elements and specifies whether these design features were used within treatment group 2only or both treatment group 1and the treatment 2 group. VoiceThread's design most likely influenced not only the ability of students to learn appropriate use of discourse markers, but it also influenced levels of student engagement, particularly, among students within the treatment 2 group.

Table 3-3: VoiceThread Design Elements

Design Element of VoiceThread		Location of Element	Purpose and Function within Experimental Group	Which experimental group, treatment group 1 or treatment group 2 used this design element?
Basic functions	Opening dashboard screen	Appears as soon as an individual logs into the site	Allows convenient review of past recordings	Both the treatment 1 and the treatment 2 groups had the option of reviewing past recordings
	Video camera functionality	Within the "create" tab on the opening /dashboard screen, students are given the option to either upload or record a video.	Integrates with web cam to conveniently record and securely upload a video to the web-based platform. The original recorded video (as well as uploaded videos) appear large in the center of the main screen.	Both the treatment 1 and the treatment 2 groups
	Slider bar and timer	On the bottom of the screen	The slider bar allowed for convenient cuing to points of interest within the videos for review and recording commentaries.	Both the treatment 1 and the treatment 2 groups
More advanced functions	Commentary and original video icons	On the left side of the screen	These icon buttons can be used to switch between viewing the original video only and the original video synched with video commentary	Only treatment group 2 generated commentary icon buttons
	Commenting tab / Video commenting tab	Hovering on the bottom part of the screen will make the comment tab appear.	Can be used to create a single video commentary corresponding to the contents of the main performance recording. By default, the completed commentary video appears on the left side of the screen but can be moved.	Treatment 2 group only

Instrumentation and Data Collection

The researcher designed the test instrument in consideration of the goals of the research, best practices in test construction as well as limitations related to resources. The assessment instrument used within this research exemplifies an orientation towards *focused assessment* versus more holistic modes of assessment as well as an example of *static assessment* versus dynamic assessment. With input and final approval of the dissertation committee, the researcher developed a communicative speaking test that focused on students' use of discourse markers within spoken language. The test instrument was not intended to be graded holistically per se. Instead, the researcher created the test to be evaluated upon students' use of discourse markers and not students' use of grammar, fluency, vocabulary and so forth. That is, the appropriate use of discourse markers was the sole criteria in grading this *focused assessment*. The researcher made this decision in order to narrow the focus of the assessment. In addition, he made this decision because of concerns about resources necessary to holistically grade a large number of communicative speaking tests. For example, the SPEAK test, once produced by the Educational Testing Service (ETS)[12] and used by many language teaching institutions, requires multiple raters. The researcher did not have the resources necessary to recruit multiple raters. In addition to its orientation related to *focused assessment*, this test represents an example of *static assessment* (Poehner and Lantolf, 2005; Antón, 2009). In other words, the paper-based test booklet was simply given to students to record individually, without an interlocutor. This individual or static orientation towards the speaking test was arguably a bit unauthentic for assessment of speaking tasks related to argumentation and interpersonal negotiations. Nevertheless, this format was necessary in order to provide a sense of individual achievement

[12] "The SPEAK test is a 20-minute audiotaped oral test in which the examinee listens to the questions and answers them into a tape recorder." (Eggly et al, 1999, p. 203).

and homogeneity among test-taking conditions. The items within this test necessitate students to argue their opinions, perform short role plays and give fictional formal didactic presentations (Appendix A). A few of the items are inspired by items within the SPEAK test once produced by ETS although they are quite different. That is, items within the discourse marker quiz within this study included scaffolded tasks prompting students to use more formal discourse markers within their speech. An example from the test, task 5a, is included within Figure 3-1 as an example. The complete test can be found within Appendix A. The researcher decided to integrate the theme of *technology* throughout the first three tasks of the test in order to reduce students' cognitive load incurred by switching between too many different topics to be discussed. Many experts in the field of language test assessment, for example Buck and Tatsuoka (1998) of the Educational Testing Service (ETS), have practiced theme-based test item construction (p.131). The design of the test instrument within this study was based upon the goals of the research study, best practices in test construction, as well as limitations related to available resources.

Figure 3-1: Sample Discourse Marker Assessment Page

Sample Discourse Marker Assessment Page

5. Negotiate tasks:

5a. Pretend that you are a leader of a group working on a class project. You have written an agenda for your first group meeting but you will need to be sure to express yourself politely. If you wish, you may include your own related ideas. Although you do not need to address each part of the agenda, remember to use appropriate discourse markers and to be polite / formal. (45 seconds to plan; 45 seconds to speak).

Agenda	Notes:
I. Introductions You, Frank, Natalia II. Choice for projects – 1. Business marketing plan (my preference) 2. Market analysis III. Division of work – 1. Library research? 2. Interviews? 3. Math 4. Write the report IV. Meeting times, e.g. 1. 4:30 pm in the library? 2. After dinner somewhere	Who are you? Tell me the advantages and disadvantages Who is going to…? Last time I was in a group project did too much!! I don't want to do this. Someone else It must be at a convenient time for me

Use of uniform test administration procedures was necessary to ensure test reliability and validity as well as to meet ethical standards of research. This discourse markers-focused assessment was given as a pre-assessment at the beginning of the academic term and the same test was given as a post-assessment at the end of the academic term. Within the recorded orientation to the test, students were encouraged to use discourse markers to enhance their speech and were given a brief explanation of what is meant by a *discourse marker*. Using Sony Soloist, automatized spoken test directions, test prompts and recording times were implemented in order to ensure uniformity. The test recording was implemented through the creation of an automatic comparative recording (ACR) exercise file. The schedule of tasks can be found within Table 3-4. Within the main quantitative testing portion of the study, the instructor-researcher instructed students within both treatment group 1 and treatment group 2 to click on the Sony Soloist software icon on their computer desktops and use their headphones. While the students listened to the audio directions and completed their tests, the instructor circulated around the classroom to ensure that students were on the correct page of their test booklets. Following the administration of the discourse marker speaking quiz, the researcher-instructor reviewed the letter of consent form, which was approved by the university institutional review board, with students, passed out consent forms and allowed students to either sign or not sign the consent forms. These test administration procedures were necessary to ensure not only the reliability and validity of the assessment but also to meet ethical standards of research in gaining participant consent.

Table 3-4: Schedule of Discourse Marker Test Tasks

	Allotted time (in seconds)		
Test Task (within test audio / Soloist ACR file)	**Directions**	**Planning**	**Speaking**
Orientation	:56	n/a	n/a
1. **Warm-up:** introduce yourself (not actual part of test)	:08	:05	:10
2. **Opinion / argumentation task:** Argue for or against the usefulness of technology, e.g. mobile phones and the internet	:32	:25	:45
3. **Lecture task:** Lecture on the impact of the internet on business	:27	:45	:45
4. **Persuasive Speech:** Lecture persuasively on the advantages or disadvantages of online education	:31	:45	:45
5a. **Negotiate Task:**	:29	:45	:45
5b. **Negotiate Task:** (continued)	:31	:45	:45
Subtotals	**3:34**	**3:30**	**3:55**
Total time			**10:59**

In order to learn about reasons why students were either engaged or not engaged within the mediated, communicative lessons, a qualitative approach was integrated in to this research. Qualitative data research was implemented after quantitative data was collected; this involved follow-up questions within a qualitative survey (Appendix B). The line of questioning included questions relating to students' impression of use of VoiceThread and annotating their recordings as well as whether students felt the use of technology within the classroom was useful to their language development. Questions included:

- *"What strategies do language learners use in completing ePortfolio tasks?"*

- *"What challenges do students encounter in performing these e-portfolio-related tasks?"* and
- *"What attitudes and level of engagement do students involved in these ePortfolio tasks exhibit?*

In order to meet the goals of this research in learning about student motivation and engagement, a qualitative approach was integrated into the research procedures.

Transcription and Coding of Data

Transcribing the data within this research was an arduous yet necessary process. Each of the discourse marker test recordings of the 68 students who signed the consent form were transcribed. Because each student took the test twice during the course of academic term, the researcher transcribed 136 tests, which amounted to a total of approximately eight hours of recordings to be transcribed. In addition, more than an hour of qualitative surveys was also transcribed. Within this transcription process, Express Scribe Transcription Software (NCH Software, 2016) was used to facilitate the cuing of the audio files while Nuance Dragon Naturally Speaking software (Nuance, 2016) as well as Apple's built-in voice recognition functionality was used to verbally transcribe the audio recordings. During transcription, the researcher noticed that one student had apparently not turned the page at the correct time midway during the test. Because the student recorded utterances that were not related to the task within the test, this particular student's test data was not included within the subsequent analysis. Transcribing the data was a key step in completing this research.

Quanticizing

Within the process of obtaining and analyzing data, this research applied the idea of

quanticizing, a concept related to the idea that qualitative data can be counted such that they can be analyzed using quantitative research methods. While some researchers may grade student responses to assessments such as discourse completion tasks (DCTs) holistically, that is, on the overall quality of speech, other researchers have utilized a system of coding (Bardovi-Harlig and Hartford, 1993. p.6). Researchers can assess of DCTs either holistically or through a use of coding, similar to the methodology used within this research. For example, interviews or other transcriptions can be coded into categories or constructs that are of interest to the researcher, counted and then converted into quantitative data. In this process of quantizing data, what was once considered qualitative data is treated as numbers (Sandelowski, 2000 p.253). In many cases within research, quanticized numerical data "communicates more effectively and reliably than does use of vague terms to indicate more or less frequent occurrence of some feature in the text" (Bazeley, 2006 p.69). In order to assess use of discourse markers within communicative speech, this research made thorough use of methodologies related to *quanticizing*.

The use of computer software was essential to the reliability of this research within the process of quanticizing data. QSR NVivo 11(QSR International was used for determining the frequency of discourse markers used by students within their test transcripts. NVivo is a Computer Assisted Qualitative Data Analysis (CAQDAS) software program which is used often within qualitative research but can also be used in research contexts involving quanticizing data. NVivo provided an additional rater, in addition to the teacher-researcher, which afforded the research a greater degree of reliability. That is, after NVivo counted the number of discourse markers within each of the 68 students' two recorded tests, the researcher also counted the number of appropriate discourse markers and later an Intra-class Correlation Coefficient (ICC) statistic was run to ascertain and ensure reliability between the computer rater and the human rater. QSR NVivo seems to be well-respected within research literature to analyze discourse

(Mercier, 2004; Diniz, 2005; Sevier, 2004). Use of QSR NVivo as the rater within this research ensured the reliability of quanticized data within this research.

In order to search for particular discourse markers within the transcripts, it was necessary for the researcher to compile lists of discourse markers to be searched through both NVivo and, for purposes of establishing reliability, through human assessment. As previously mentioned, the task of generating corpora or lists of discourse markers and categorizing these discourse markers can be a difficult task due in part to the fact *discourse markers* as a concept is a nebulous term that eludes exact definition. Because of the breadth of this task, the four lists of discourse markers, each corresponding to one category within Fung and Carter's framework, were compiled in stages. First, the researcher compiled the lists as according to target discourse markers taught within the instruction. Then, as he read through and coded transcripts, he added additional phrases that he thought were salient to the purposes of this study. It was, at times, difficult to compile a thorough list of such discourse markers. Moreover, it was sometimes a difficult balance between using search queries that were too precise, to the extent that too many valid instances of a discourse marker within the transcripts would be excluded from the NVivo text query search operation, and being too broad. Most likely, search queries that would be overly specific would include too many words within the phrases; on the other hand, text queries that consisted of only one word were arguable at risk of being too broad. Nevertheless, the researcher decided to include a few one-word search queries in order to produce references to a variety of contexts. This process of compiling text search queries involved using many permutations of phrases. The researcher worked in multiple stages to compile four lists of discourse markers to be searched using NVivo.

Within the process of compiling these lists of discourse markers, the researcher made certain adaptations to Fung and Carter's framework; in addition, the research omitted certain

discourse markers that were felt to be not useful to the research. Within the "interpersonal" list of text queries, the researcher took minor liberties in extending Fung and Carter's category of discourse markers: the researcher included key phrases such as *"divide the work"* and *"meeting time"* since these phrases were key to the task within the test item. Certain discourse markers were consciously omitted from the list of text queries if they were considered to be too representative of a more informal register of discourse, or, in the words of Cummins (1980) too be too representative of basic interpersonal communicative skills (BICS)." Examples of more informal or basic discourse markers that were left out of the coding analysis within NVivo were rhetorical sequencing discourse markers such as *"first," "second," "next"* and so forth. These discourse markers in themselves were not counted within the NVivo frequencies although a more complex discourse marker integrating these discourse markers, for example, *"first, let's discuss…,"* would have been counted. In other words, the words *"let's discuss"* would have been counted as one discourse although the word "first" would not have been counted. These adaptations were necessary to the goals of this research and for the effective use of NVivo.

The researcher used NVivo's text query functionality within these analytics. In order to ensure an accurate search, in other words, to ensure the search yields were congruent to the search queries, it was necessary to use Boolean operators represented by double quotes (" ") enclosing the words. To additionally ensure accuracy, the Boolean operator + was placed between words, for example the phrase *"on the other hand"* would be entered as *"on+the+other+hand"*. In addition, NVivo's "stop word" list had to be deleted within the default of the work project. This "stop word list" consisted of less significant words like conjunctions or prepositions that may not be meaningful to … analysis" (QSR NVivo, 2016). The four reference lists of discourse markers corresponding to didactic presentation language, discussion / debate language, and pragmatic / negotiation language can be found within below.

The keywords and key phrases that were considered to be target discourse markers are included within Table 3-5, Table 3-6, Table 3-7, and Table 3-8. NVivo's text query functionality was easy to use and was essential to the successful completion of this study.

Table 3-5: Expressive Discourse Marker Text Search Queries

Expressive Discourse Markers Debate / discussion activities Approximating Fung and Carter's "Cognitive" Category of Discourse Markers		
"Denoting thinking processes" / Expressing an Opinion • "argue" • "i feel" • "in my experience" • "it seems to me" • "as far as i" • "what i think" • "i believe" • "i personally believe" • "i think" • "I don't think" • "I do not think" •	• "i feel" • "i don't feel" • "in my experience" • "the point you make" • "in my opinion" • "i'd like to say" • "would like to say" • "I don't understand" • "I understand" • "I can't stand" • "as far as i'm concerned" • "point of view"	**"Reformulation / Elaboration"** • "I mean" • "in other words" • "emphasize" • "what i mean" • "what i'm saying" • "what I am saying" • "that is" • "as i said" • "let me say that in another way" • "specifically" • "especially" • "that is" **Expressing Agreement / Disagreement** • "agree" • "disagree" • "quite the opposite" • "on the contrary"

Table 3-6: Rhetorical Discourse Marker Text Search Queries

Rhetorical Discourse Markers

Didactic presentations (given in front of the class)

Approximating Fung and Carter's "Structural" Category of Discourse Markers

Opening and closing of topics

- "consider"
- "going to talk"
- "would like to talk"
- "will talk about"
- "going to share"
- "going to discuss"
- "like to talk"
- "like to discuss"
- "i'll be discussing"
- "I will be discussing"
- "pluses of this"
- advantage
- disadvantage
- "want to discuss"
- "start out"
- "start with"
- "begin by"
- "overview"
- "start by"
- "move on to"
- "address"
- "want to discuss"
- "going to discuss"
- "overview"
- "now let's"
- "now that"
- benefit
- "focus on"
- "now let's"
- "now that"
- "be covering"
- "will cover"
- "move on"
- "move to"
- "going to talk about"
- "want to talk about"
- "like to talk about"
- "let's talk about"
- "main argument"
- "main point"
- "introduce"

Sequence

- "moreover"
- "in addition"

Exemplification

- "states"
- "demonstrates"
- "suggests"
- "according to"
- "describe"
- "argue"
- "argues"
- "in other words"
- "means"
- "for instance"

Counterargument

- "counterargument"
- "people think"
- "people argue"
- "people feel"
- "people say"
- "counter"

"Summarizing" / Conclusion

- "I hope you"
- "infer"
- "can conclude"
- "this leads us"
- "conclude"
- "in conclusion"
- "in general"
- "generally"
- "in summary"
- "to summarize"
- "to sum up"
- "how can we explain"
-

Table 3-7: Interpersonal Discourse Marker Text Search Queries

Interpersonal Discourse Markers Role-play exercises within class		
Introductions • "my name is" • "nice to meet you" • "pleased to meet you" • "it is a pleasure to" • "my pleasure" • "look forward" • "looking forward"	**"Marking Shared Knowledge"** • "we could consider" • "seems that" • "seems like" • "sounds like" • "how about" • "let's try" • "everyone agrees" • "everyone seems to+ agree" • "why don't we" • "what about" • "in my experience" • "let's choose" • "what do you think about" • "i see what you mean" • "I see your point" • "I understand" • "I don't understand"	
Managing and Monitoring Work • "who wants to" • "let's plan" • "how is" • "how are" • "needs to be" • "we have been working" • "we've been working" •	• "remember" • "divide work" • "divide the work" • "division of work" • "divide our work" • "divide this work" • "need to choose" • "divide the labor" • "division of the work" • "division of the labor"	**Establishing Meeting Times** • "when should we" • "let's meet" • "meeting time" • "can meet" • "could meet" • "can we meet" • "could we meet" • "what time"

Expressing Preferences / Willingness	Requests / Suggestions	Offering / Asking for Assistance
• "i wouldn't mind" • "i would be happy" • "i'd be happy" • "let me" • "i prefer" • "i wouldprefer" • “my preference” • "i'd be willing" • "I would be willing" • “I can help” • “I could help” • “may I help” • “could I help”	• "may I ask" • "what do you think" • "could I ask" • "how do" • "would you" • "can you" • "would" • "could you"	• "need help to" • "need help with" • “don’t hesitate to” • “do you need” • “does anyone need” • “do you have any” •

Apologies	Addressing concerns	Closing / Expressing thanks
• "i'm sorry" • "i'm so sorry" • "i'm really sorry" • "I am really sorry" • "i'm very sorry" • "I am very sorry" • "I am sorry" • "I am so sorry" • “apologize”	• "what concerns you" • "may I tell you" • "excuse me" • "need to make" • "let's make sure" • "let's ensure" • "let's make sure" • "try to compromise" • "you've been quiet" • "what concerns you" • "didn't catch" • "how are you" • "how would we" • "how does this" • "could we please" • "are we all" • "may I tell you" • “I hope”	• "thank you"

Table 3-8: Referential Discourse Marker Text Search Queries

“Referential” Discourse Markers Approximating Fung and Carter’s “Referential” Category of Discourse Markers	
“Consequence”	**"Comparison”**
• “impact” • “effect” • “therefore” • "one cause" • “explanation” • “result” • “because of” • “leads to” • “reason” • "another cause"	• “similarly” • “likewise” • "on the other hand" • “however” • “although” • “even though”

Data Analysis

This mixed-methods research utilized both quantitative methods of data analysis as well as qualitative methods of data analysis. Within the quantitative component of the research, a repeated measures analysis of variance (ANOVA) was used to analyze treatment 1 and treatment 2 experimental group differences with regards to discourse marker frequencies. The researcher analyzed discourse marker usage was analyzed across treatment 1 and treatment 2 groups with respect to contextual uses within didactic presentations, debates/discussion and negotiations/pragmatic uses of language. SPSS (IBM, 2013) was used to conduct these analyses. Within explanatory qualitative analyses, students were interviewed and transcriptions were analyzed for difficulties students experienced in eliciting appropriate use of discourse markers within their didactic and conversational digital recordings. These interview transcripts were analyzed using thematic and axial coding techniques. These analyses offered additional insight with regards to student attitude and motivation towards ePortfolios and other technologies within the treatment 2 conditions. *Open coding* is defined as "marking what is of interest in the text" (Corbin and Strauss, 2008 p.195). This stage involves investigation of similarities between texts or transcripts (Priest, Roberts, and Woods, 2002 p.34). Subsequent *axial coding* can be defined as a process of creating a secondary set of codes based upon observed connections among the initial, primary open codes (Priest, Roberts, and Woods, 2002 p.34). Both quantitative and qualitative methods of data analysis were important in meeting the research goals of this study.

Reliability and Validity

The use of QSR NVivo to measure the frequency of discourse markers offers both

benefits and drawbacks with respect to issues related to reliability and validity. On one hand, the use of a computer software package offers a sense of objectivity, that is, freedom from researcher bias, as well as efficiency. While human raters suffer from fatigue within the process of attempting to grade several hours' worth of transcripts, a software program does not experience such fatigue and is often more reliable. Given consistent inputs, computer software packages will yield predictable outputs. On the other hand, it is true that a computer software package does not recognize the appropriateness of context of words and phrases within the transcript. In addition, the computer software package cannot distinguish between a discourse marker used as a *verbal pause* or *linguistic hedge* (Holmes, 1986 p.15) from a discourse marker used in a useful fashion. That is, the issue of validity emerges as an issue. For this reason, this research utilized two raters to ensure validity of the data: the NVivo software package, as the primary coder, as well as the researcher as a human coder. Although the NVivo software package is unable to discern the appropriateness of discourse markers used within specific contexts, the use of a second human rater mitigates these validity-related issues. Moreover, the use of an unbiased computer software program enhances the reliability and decreases the opportunities for human bias within the research.

In order to ensure reliability, it is important to ensure that the scoring between the human grader and the software grader remains relatively consistent. That is, inter-rater reliability is necessary in research in which data is assessed by multiple raters (Hallgren, 2012, p.23). As a result, this research used the Intra-class Correlation Coefficient (ICC) to compare the discourse marker count yields from NVivo with the discourse marker counts from the human rater. Admittedly, a degree of error is to be expected, due to, for example, fatigue on the part of the human rater. Nevertheless, only an Intra-class Correlation Coefficient of 0.7 or above were

considered acceptable within this research. While Cohen's kappa is appropriate for assessing inter-rater reliability among nominal or categorical variables (p.26), Intra-class Correlation Coefficients are appropriate for "ordinal, interval, or ratio variables" (Hallgren, p.29). Therefore, an ICC were utilized within this study through the use of the SPSS statistical package. The use of the ICC statistic ensured reliability between the human and computer rater.

The issue of the researcher as instructor with regards to issues of validity needs to be addressed. Action research such as this is often called into question with respect to the objectivity of the researcher who also acts within the role of instructor. In order to ensure validity, the researcher ensured that his curriculum objectives were the same between the treatment 1 and treatment 2 experimental groups. Use of both quantitative and qualitative forms of analysis helped to compensate for the flaws in each particular method. Although the use of QSR NVivo helped to reduce researcher bias, the influence of teacher-researcher needs to be taken into account within analysis of the students within the researcher's own classroom cohort. However, the use of the same instructor, the researcher, helped to ensure consistency between the treatment 1 and treatment 2 groups in terms of the lessons implemented in class. In addition, the researcher-instructor made it clear that participation or non-participation in the study had no influence upon students' grades. The researcher took necessary precautions to ensure that his role as classroom instructor did not affect the validity of research data.

Ethics

The researcher attended to issues related to ethics within the process of collecting and analyzing data. In order to attain persuasive evidence of the usefulness of the annotations, the annotation-based intervenion had to be withheld from treatment group 1. Moreover, student-

participants, assigned to a particular class, could not choose whether they would like to be in the treatment group 1 or the treatment group 2. Nevertheless, since teachers did not use the treatment of media annotations at the current time, the researcher feels that student-participants would not necessarily be deprived of best uses of technology. The need for persuasive evidence related to the usefulness of the technology-based treatment requires the use of a two separate treatment groups. In addition to this issue of sampling, the researcher maintained research ethics which mandates that coercion must not occur. That is, the researcher emphasized the completely voluntary nature of this assignment and spent about five minutes before each interview reviewing the letter of consent with students. It was emphasized that participation or non-participation in this research would neither help nor hurt students' grades. Moreover, to show students that he valued their time, the researcher offered compensation of $10 for students to participate though not every student accepted the compensation. All data involved in this research was kept in a secure location, coded, and will be destroyed at the conclusion of the research. The researcher took precautions to ensure research ethics and student privacy.

Preliminary Findings

The research took efforts to make improvements upon the research design since pilot tests. A small pilot study, consisting of five students in treatment group 1and five students within the treatment 2 experimental group, was conducted during the fall semester of 2014. It did not prove the treatment 2 conditions to have a significant effect on student use of discourse markers. Numerous factors may have contributed to these findings. For example, the previously-used testing instrument may have not been sensitive enough to differentiate variances in students' abilities to effectively utilize discourse markers within speech, the specific

measurement of interest within this study. Therefore, the testing instrument was revised; more discrete prompts with the aforementioned scaffolding were added to the test questions. In addition, because this trial study was composed of so few students, the researcher decided to proceed to repeat data collection and analysis using a larger sample of participants. Improvements to the experimental design and instrument have included more discrete prompts.

Summary of Methods

This study examined the effect of annotation functionality within VoiceThread, a popular online multimedia media platform as a possible means to promote reflection among students and in turn facilitate the appropriate use of discourse markers within communicative speech. The research hypothesizes that through use of media annotation technology, used within an instructional strategy approximating the use of ePortfolios, students would develop in their abilities to appropriately use discourse markers within communicative speech. The researcher analyzed pre- and post- semester measurements of student speech on an instrument measuring the appropriate use of discourse markers. After transcribing student recordings from the test, the researcher utilized Computer Assisted Qualitative Data Analysis (CAQDAS), specifically, the qualitative analysis package QSR NVivo 11. This software package was used to compare frequency and use of appropriate discourse markers between these pre- and post- semester measurements. Significant results would demonstrate the effectiveness of technology-based interventions in the promotion of useful discourse markers within communicative speech. Follow-up qualitative interview questions gained insight related to students' experiences with the technology.

CHAPTER IV: RESULTS

The purpose of this study was to explore and identify teaching strategies and implementation of technology that could assist language learners in improving their use of communicative language skills, particularly with regard to use of spoken discourse and spoken discourse markers. Appropriate use of spoken discourse is a crucial skill within multiple contexts ranging from being able to present a persuasive argument, being able to present a well-organized didactic presentation, or being able to negotiate interpersonal interactions with various stakeholders. This study focused upon the examination of pedagogical strategies involving use of VoiceThread, a web-based media platform, to attain these instructional aims to enhance students' abilities related to communicative speech. In particular, the study sought to generate evidence to support the use of digital media annotations integrated within an online media platform in order to facilitate the appropriate use of these discourse markers. The research sought to determine whether the process of using digital annotations to engage students in a metacognitive process in reflecting upon their individual performances within communicative speaking tasks could enhance these students' use of appropriate discourse markers within speech. The study investigated whether use of digital annotations could enhance the use of these discourse markers in a general sense, but in addition, the study sought to determine whether the treatment 2 experimental intervention could specifically improve particular categories of this course markers as according to Fung and Carter's classification of discourse markers, which include a *cognitive category, structural category, interpersonal category,* and *referential category* of discourse markers. This study aimed to identify effective use of technology that could improve skills related to communicative speaking.

In order to obtain persuasive evidence, this research administered a primary quantitative study involving an examination of participants' use of discourse markers within a test of oral communicative language skills. Using these pre- and post- semester measurements, the QSR NVivo software package was used to identify the frequency of appropriate discourse markers within both the treatment 1 and treatment 2 experimental groups within the study. The SPSS statistical software package was used to identify any statistically differences in use of discourse markers between the first and second treatment groups. Within the research design, significant results would demonstrate the effectiveness of technology-based interventions involving use of digital annotations, treatment condition 2, in the promotion of useful discourse markers within communicative speech. Moreover, within the research design, follow-up qualitative interview questions would gain insight related to students' experiences with the technology.

Quantitative Results

Descriptive Statistics Related to Student Demographics

A substantial degree of student diversity was encompassed within sampling. The researcher invited nine classes of students to participate in the study. The researcher assigned these classes to either treatment 1 or treatment 2 experimental conditions. At the end of the respective academic terms, 68 of these individuals who completed pre- and post-tests involving communicative speaking were willing to participate in the experiment and signed the necessary consent form. The researcher only used the data from these 68 individuals. 31 of these participants were those students given treatment 2 experimental group conditions and the other 37 participants were those students within the treatment group 1 conditions. The sample was distributed fairly evenly between female and male participants. 57.4% of students represented East Asian nationalities, such as the People's Republic of China, Japan and Korea. The

remainder of the students represented a diversity of nationalities from the Middle East, Southeastern Asia and Latin America. Although perhaps ideally a more diverse sample would be used in terms of nationality, these demographics are fairly representative of the student population at the university ESOL Center where the research took place. Table 4-1 illustrates the distribution of students by nationality and gender within the study. Moreover, the demographics are probably representative of the student populations at university intensive English programs throughout the United States. Therefore, if the results of this study cannot be generalized to every teaching context involving English for Speakers of Other Languages, perhaps the results can at least be generalized to other teaching contexts within university ESOL contexts. In studying this data, it was apparent that scores on these pre- and post-tests generally improved over the course of the academic term. The substantial degree of student diversity was encompassed within sampling makes this study useful in the ability of its results to be generalized to multiple contexts.

Table 4-1: Distribution for Each Gender by Nationality among Treatment Group 1 and Treatment Group 2

Broad nationality groupings	Treatment 1			Treatment 2			Total		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
East Asia (e.g. China, Japan, Korea)	9 (24.3%)	13 (35.1%)	22 (59.5%)	6 (19.4%)	11 (35.5%)	17 (54.8%)	15 (21.1%)	24 (35.3%)	39 (57.4%)
Middle East (e.g. Kuwait, Saudi Arabia, Turkey)	7 (18.9%)	4 (10.8%)	11 (29.7%)	3 (9.7%)	5 (16.1%)	8 (25.8%)	10 (14.7%)	9 (13.2%)	19 (27.9%)
Southeast Asia (e.g. Indonesia, Thailand, Vietnam)	1 (2.7%)	0 (0%)	1 (2.7%)	4 (12.9%)	0 (0%)	4 (12.9%)	5 (7.4%)	0 (0%)	5 (7.4%)
Latin America (e.g. Brazil, Mexico, Paraguay)	2 (5.4%)	1 (2.7%)	3 (8.1%)	1 (3.2%)	1 (3.2%)	2 (6.5%)	3 (4.4%)	2 (2.9%)	5 (7.4%)
Total	19 (51.4%)	18 (48.6%)	37 (100.0%)	14 (45.2%)	17 (54.8%)	31 (100.00%)	33 (48.5%)	35 (51.5%)	68 (100.00%)

Descriptive Statistics Related to Pre-Tests, Post-Tests, and Gain Scores

In general, students' performances on the assessment improved over the course of the academic term, which indicates that their ability to use discourse markers effectively improved during this period. Table 4-4 depicts the means and standard deviations related to gain scores between the pre-test and posttests; the chart depicts scores corresponding to usage of discourse markers belonging to various categories corresponding to Fung and Carter's classification system of discourse markers. A total of 68 students demonstrated a mean score of 4.56 (SD = 4.36) of improvement from pre-test to post-test. Treatment group 1 demonstrated an improved mean score of 4.27 (SD = 4.62); treatment group 2 yielded an improved mean score of 4.90 (SD

= 4.09). Overall this increase in mean scores indicates improvement in students' ability to use discourse markers effectively during the course of the academic term.

Table 4-2: Means and Standard Deviations for Pre- Tests

	All Categories		Expressive / Cognitive Category		Rhetorical / Structural Category		Interpersonal Category		Referential Category	
	M	SD	M	SD	M	SD	M	SD	M	SD
Treatment Group 1 (n=37)	12.60	4.39	3.84	2.56	4.43	2.71	3.51	2.05	0.81	1.02
Treatment Group 2 (n=31)	10.29	5.85	3.58	2.86	3.16	2.44	2.97	2.63	0.58	0.76
All participants (n=68)	11.54	5.20	3.72	2.68	3.85	2.65	3.27	2.33	0.71	0.92

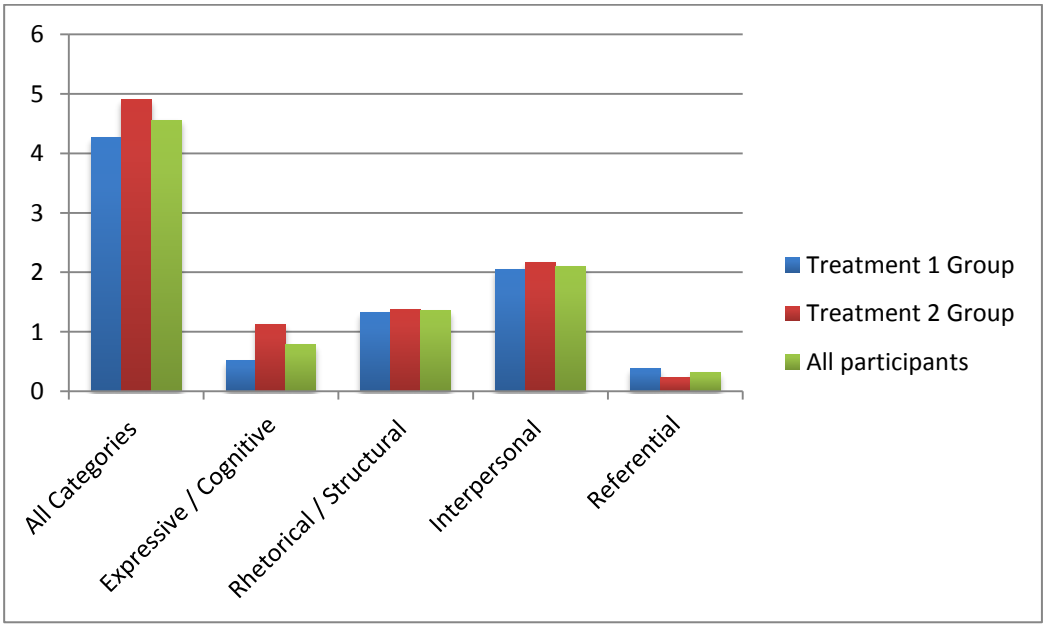
Table 4-3: Means and Standard Deviations for Post Tests

	All Categories		Expressive / Cognitive Category		Rhetorical / Structural Category		Interpersonal Category		Referential Category	
	M	SD	M	SD	M	SD	M	SD	M	SD
Treatment Group 1 (n=37)	16.87	5.52	4.35	2.43	5.76	3.00	5.57	3.30	1.19	1.79
Treatment Group 2 (n=31)	15.19	5.83	4.71	3.24	4.55	2.83	5.13	2.53	0.81	1.01
All participants (n=68)	16.10	5.69	4.52	2.81	5.21	2.97	5.37	2.96	1.02	1.49

Table 4-4: Means and Standard Deviations for Gain Score from Pre-and Post Tests

	All Categories		Expressive / Cognitive Category		Rhetorical / Structural Category		Interpersonal Category		Referential Category	
	M	SD	M	SD	M	SD	M	SD	M	SD
Treatment Group 1 (n=37)	4.27	4.62	.51	2.34	1.32	2.95	2.05	3.58	.38	1.83
Treatment Group 2 (n=31)	4.90	4.09	1.13	3.44	1.38	3.03	2.16	2.61	.226	.88
All participants (n=68)	3.54	4.17	.79	2.88	1.35	2.97	2.10	3.15	.31	1.47

Figure 4-1: Means and Standard Deviations for Gain Score from Pre-and Post Tests



Inter-Rater Reliability

In order to ensure reliability, it was important to ascertain that the scoring between the human grader and the software grader remained relatively consistent. The researcher needed to demonstrate a high degree of reliability between the computer rater, QSR NVivo, and the human rater; therefore, it was necessary to conduct an Intra-Class Coefficient (ICC). This statistical reliability between a human grader, who would discern issues related to discourse markers used inappropriately, and a computer rater, would in turn demonstrate the validity of the discourse marker assessment. In fact, a high degree of reliability was found between QSR NVivo as a rater and the human rater, the researcher. In examining the reliability of these two raters with regards to differences between total post test and pre-test scores, the single measures ICC average measures was .811 with a 95% confidence interval from .694 to .884 ($F(67,67)= 5.30$, $p<.001$). This statistic denotes a good level of reliability between the two raters. Disparities between QSR NVivo and the human rater may be attributed at least in part to fatigue on the part of the human rater in not identifying discourse markers within the multiple hours' worth of transcripts. For this reason, QSR NVivo was used as the single means of measurement within this study. Despite this fatigue on the part of the human rater, the relatively high degree of reliability is an assurance that all participants usually used discourse markers, as identified within the transcripts, within an appropriate context and the counting of these discourse markers was administered in a valid manner.

Differences in Performance as Related to Gender and/or Broad Nationality Group

Females and males demonstrated no significant differences in performance on the

discourse marker quiz; students of different broad nationality groups also showed no significant differences in performance on this test. A 2 X 2 ANOVA comparing scores of females and males (Gender X time) within the study found no significant differences between the performance on the discourse marker assessment between females and males, F (1, 66) = 1.873, p = .176.

Table 4-5: Means and Standard Deviations for Females and Males from Pre-and Post Tests

	Pre-test		Post-test	
	M	SD	M	SD
Females (N=33)	12.76	4.49	16.58	5.70
Males (N=35)	10.40	5.61	15.66	5.72
All participants (N=68)	11.54	5.20	16.10	5.69

Similarly, a 2 X 2 ANOVA comparing scores of broad nationality groups (East Asians, Middle Eastern, Southeast Asian, Latin American) within the study found no significant differences at the p <.05 level between the performance on the discourse marker assessment among different broad nationality groups, F (3, 64) = 1.206, p = .315. No significant differences in performance related to gender or broad nationality group were found.

Table 4-6: Means and Standard Deviations for Broad Nationality Groups from Pre-and Post Tests

	Pre-test		Post-test	
	M	SD	M	SD
East Asia	11.05	4.56	15.72	5.65
Middle East	11.26	6.37	16.53	5.19
Southeast Asia	15.40	4.98	20.80	6.98
Latin America	12.60	5.03	12.80	5.02
All participants	11.54	5.20	16.10	5.69

The Effect of Digital Annotation on Participants' Use of Discourse Markers

Although each of five sets of statistical data used to answer each of the five hypotheses yielded a significant main effect, none of these five sets of data yielded a significant interaction effect. In order to analyze each of the five hypotheses, the researcher used a 2 X 2 analysis of variance (ANOVA) with repeated measures to examine the effect of instruction. Instructional effect, the between-subjects factor, was represented by two levels: with and without the use of digital annotations within instruction. The treatment 1 group did not use digital annotations within instruction while the treatment 2 group did use these annotations. Time, the within-subjects factor, was represented by two levels: beginning-of-term test and end-of-term test. The

researcher used SPSS to calculate the results for each set of data. Each statistical analysis yielded a significant main effect but no interaction effect.

Research Question 1

Does use of digital media annotations mediated within VoiceThread improve students' ability to use discourse markers appropriately in a general sense? That is, is there a significant difference between students using the digital media annotations and the other group not using them?

The first research question sought to determine whether students' use of digital annotations could facilitate an increased number of appropriately used discourse markers within the assessment given to students. This first research question did not focus upon students' ability to use any one particular category of discourse marker as according to Fung and Carter's system of categories. Instead, this research question was intended to determine whether the technology-based treatment 2 conditions could enhance students' use of discourse markers in a general sense. The results of the 2 X 2 ANOVA indicated a significant time effect, F (1, 66) = 73.883, p <. 001. There was no significant interaction between treatment 2 group and time, F (1, 66) = .352, p =. 555. Table 4-3 summarizes the results of this ANOVA.

Table 4-7: A 2x2 ANOVA Results for Gain Score by Time and Treatment Group

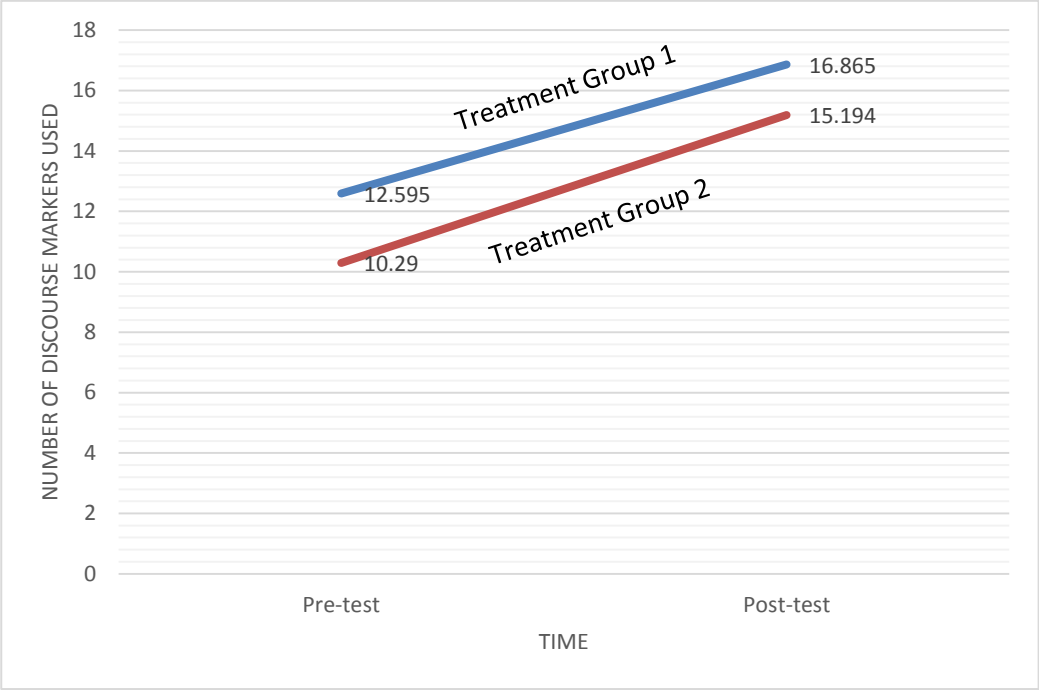
Source of variance	*Df*	F ratio	*p-value*
(A) Time	1	73.883	<. 001*
(B) Group	1	2.744	.102
A x B (interaction)	1	.352	.555
Error	66		

* $P < .05$,

These statistics suggest that the use of VoiceThread's basic functions lead to a significant increase in appropriate use of discourse markers within different contexts, including presenting arguments, presenting didactic presentations, and within pragmatic or interpersonal contexts. In other words, these statistics demonstrate that participants within both treatment groups in the study demonstrate a significant improvement in the general use of discourse markers as according to Fung and Carter's classification system consisting of four different categories of discourse marker.

Nevertheless, these statistics did not reveal the effectiveness of the use of digital annotation technology upon the overall performance of students in their ability to use appropriate discourse markers. Figure 4-1 demonstrates both the main effect as well as the overall disparities in scores between the treatment 1 and treatment 2 group. Because of the lack of a significant interaction effect, this statistic does not determine whether the use of digital annotations significantly enhances the use of discourse markers beyond the base basic conditions provided to both treatment group 1 as well as treatment group 2.

Figure 4-2: A Comparison of the Pretest (Time 1) and Posttest (Time 2) Means of treatment group 1 and the Treatment 2 Experimental Groups



Research questions 2, 3, 4 and 5 sought to determine whether students demonstrated improvement with regards to any particular one of Fung and Carter's categories of discourse markers within their classification system. That is, research questions 2, 3, 4 and 5 seek to determine if students demonstrated improvement within regards to being able to produce *cognitive category*, *structural category*, *interpersonal category* or *referential category* of discourse markers (p.415).

Research Question 2

Does use of digital media annotations mediated within VoiceThread improve students' ability to use expressive discourse markers appropriately exemplified by expressing ideas within academic discussions and debates? That is, is there a significant difference between students using the digital media annotations and the other group not using them?

The second research question sought to determine whether the treatment 2 condition, which comprised of students' use of digital annotations could significantly impact their use of discourse markers approximating Fung and Carter's *cognitive category* of discourse markers which include discourse markers used to express thoughts and opinions. The results of the ANOVA indicated a significant time effect, F (1, 66) = 5.434, p =. 023. There was no significant interaction between treatment group and time, F (1, 66) = .763, p =. 386. This significant time effect demonstrates that the base conditions within both treatment groups led to a significant increase in students' abilities to apply this category of discourse markers within communicative speech. Within both the treatment 1 and the treatment 2 experimental group, over the course of the academic term, students demonstrated significant improvement in their ability to use discourse markers associated with the *cognitive category* of discourse markers appropriately. In other words, the statistic demonstrates that students among both the treatment 1 and treatment 2 experimental conditions would be able to show significant improvement in their use of appropriate discourse markers within situations relating to expressing opinions or participating in discussions and debates.

However, there was no significant interaction between treatment group and time, F (1, 66) = .763, p =. 386. That is, the statistic does not reveal whether the use of digital annotations, treatment condition 2, had any significant impact on the ability of students to use this particular *cognitive category* of discourse markers. That is, no significant difference in performance between treatment group 1 and the treatment 2 experimental group with regards to this particular category of discourse markers could be found.

Research Question 3

Does use of digital media annotations mediated within VoiceThread improve students' ability to use structural or rhetorical discourse markers appropriately within didactic presentations? That is, is there a significant difference between students using the digital media annotations and a group not using them?

The third research question aimed to ascertain whether the treatment of digital media annotations used within treatment group 2 could result in students' enhanced abilities to appropriately use discourse markers approximating Fung and Carter's *structural* category of discourse markers. The results of the ANOVA indicated a significant time effect, F (1, 66) = 13.885, p < . 001. There was no significant interaction between treatment group and time, F (1, 66) = .007, p =. 932. This statistic demonstrates over the course of the academic term, among all students in both the treatment 1 and the treatment 2 experimental groups, students demonstrated significant improvement in their ability to use discourse markers associated with the *structural category* of discourse markers appropriately. That is, the statistic demonstrates that students within both the treatment 1 and treatment 2 experimental conditions would be able to use a significantly greater number of appropriate discourse markers within didactic presentations presented, for example, in front of a class of their peers. The conditions within the classroom of both the treatment 1 and treatment group 2 led to a significant improvement in use of this particular category of discourse markers.

The lack of significant interaction between treatment group and time demonstrates the inability of this study to identify the effectiveness of digital annotations on the ability of students to use this particular *structural category* of discourse markers relating to rhetoric. That is, no

significant difference in performance between the first treatment and second treatment experimental groups with regards to this particular category of discourse markers was revealed.

Research Question 4

Does use of digital media annotations mediated within VoiceThread improve students' ability to use interpersonal discourse markers appropriately within negotiations and other pragmatic contexts? That is, is there a significant difference between students using the digital media annotations and a group not using them?

The fourth research question sought to determine whether administration of the treatment 2 condition could result in improvements in students' ability to appropriately use discourse markers approximating Fung and Carter's *interpersonal* category of discourse markers. The results of the ANOVA indicated a significant time effect, F (1, 66) = 29.699, p < . 001. There was no significant interaction between treatment group and time, F (1, 66) = .019, p =. 890. This statistic demonstrates over the course of the academic term, among all students in both treatment 1 and treatment 2 experimental groups, students demonstrated significant improvement in their ability to use discourse markers associated with the *interpersonal category* of Fung and Carter's classification system of discourse markers appropriately. In other words, the statistic shows that students within both the treatment 1 and treatment 2 experimental conditions would be able to use a significantly greater number of appropriate discourse markers within the interpersonal speaking tasks included within the speaking assessment. The conditions within the classroom of both the treatment 1 and treatment group 2 led to a significant improvement in use of this particular category of discourse markers.

Nevertheless, the statistic does not indicate that the treatment 2 experimental intervention, the use of digital annotations, had any significant impact on the ability of students

to use this particular *interpersonal category* of discourse markers. That is, no significant difference in performance between treatment group 1 and the treatment 2 experimental group with regards to this particular category of discourse markers could be determined.

Research Question 5

Does use of digital media annotations mediated within VoiceThread improve students' ability to use functional, referential discourse markers appropriately? That is, is there a significant difference between students using the digital media annotations and a group not using them?

The fifth research question aimed to ascertain whether the treatment 2 conditions could facilitate appropriate use of *referential* discourse markers as according to Fung and Carter's classification. The results of the ANOVA indicated no significant time effect, F (1, 66) = 2.820, p =. 098. There was no significant interaction between treatment group and time, F (1, 66) = .180, p =. 673. This statistic demonstrates over the course of the academic term, there was no apparent improvement among all students in both treatment 1 and treatment 2 experimental groups, with regards to the use of discourse markers associated with the *referential category* of Fung and Carter's classification system of discourse markers. In other words, the statistic shows that neither students within both treatment group 1 nor students within the treatment 2 experimental group would be able to use a greater number of appropriate *referential* discourse markers. Classroom conditions among all the treatment 1 and treatment 2 groups did not lead to a significant improvement in use of this particular category of discourse markers. Students demonstrated no enhanced abilities to use discourse markers to show relationships related to, for example, cause and effect or comparison of ideas.

Discussion of Quantitative Research Questions

Main effects within statistics related to all but the last research question demonstrate a significant improvement in students' abilities to use appropriate discourse markers. That is, students within both treatment group 1 and treatment group 2, improved in this aspect of communicative speaking, most likely at least in part through their use of VoiceThread within the classroom inside and outside of the classroom. "The main effect is the effect of one independent variable averaged across the levels of the other independent variable" (Howell, 2011, p.458). In other words, the main effect is "the average of the component single-factor experiments making up the factorial design…[which] refers to the effect of this independent variable when [the other independent variable(s) is ignored" (Keppel and Wickens, 2004, p.197). When an interaction effect is absent from statistical results, researchers can still "study the effects of each independent variable separately, in the same way we would study their effects in two actual single-factor experiments" (p.197). Thus, despite the lack of a significant interaction effect, the presence of a significant main effect within this study yielded valuable information about the effectiveness of web-based media platforms as a means to promote communicative speech. Although this main effect in itself cannot serve as absolute evidence of the effectiveness of use of ePortfolios to enhance students' use of discourse markers due to a lack of a control group to isolate the effect of the use of digital annotations, they provide a strong measure of support for the use of VoiceThread within the classroom as well as a foundation for future research.

Moreover, the study also provides useful information related to the limitations of VoiceThread. That is, statistical results did not reveal that the use of VoiceThread's digital

annotations within this study enhances students' appropriate use of discourse markers in speech. A significant interaction effect between treatment group 1 and treatment group 2 was not revealed. This may be due to the limitations of VoiceThread's contiguous digital annotations, which currently are only available in the form of video commentary. However, further research examining different modalities of digital annotations may provide useful to meet these research goals.

Qualitative Results

Qualitative results yielded information related to student attitude and engagement within the context of students' use of VoiceThread. 15 of the 31 participants within treatment group 2 were willing to participate in an interview about their experiences using VoiceThread to annotate their video recordings. Table 4.4 presents the profiles of the participants. The first set of questions within the qualitative surveys sought to identify students' attitudes towards the technology as well as how motivated and engaged students were towards this technology. The second question sought to identify *why* students held these particular attitudes and levels of engagement towards the technology. Issues related to usability of the technology as well as Deci and Ryan's concepts of *relatedness competence* and *autonomy* (2000, p. 73). Qualitative results yielded insights related to best practices of this particular technology.

Table 4-8: Profiles of the Students Participating in Qualitative Interviews

Participants	Gender	Broad Nationality Category
A	Female	Middle East
B	Female	Southeast Asia
C	Female	Southeast Asia
D	Male	Latin America
E	Male	East Asia
F	Female	Latin America
G	Male	Latin America
H	Male	East Asia
I	Female	Middle East
J	Female	East Asia
K	Female	East Asia
L	Male	East Asia
M	Male	East Asia
N	Male	East Asia
O	Female	East Asia

Qualitative Research Question 1

What are students' attitudes towards assignments involving use of digital annotations mediated within VoiceThread as an online platform with regards to the facilitation of communicative speaking practice? How motivated and engaged are they within the processes of completing these assignments, for example, how are they able to reflect upon these processes?

The first set of research questions within the qualitative component of this research sought to determine students' attitudes towards the use of the digital annotations assignment within their speaking and listening classes. This first set of questions aimed to gauge the level of engagement and motivation students experienced within these assignments. The researcher used thematic codes related to *motivations towards technology use*, *self-awareness and responsibility*, and *self-efficacy*. Subsequently, the researcher coded students' interviews according to Deci and Ryan's (1985) regulatory styles, including *amotivation*, *intrinsic motivation*, and *integrated*

motivation. The interviews yielded insights related to self-awareness and responsibility as well as self-efficacy. Qualitative data suggests that there was a high level of motivation within the treatment 2 group.

Motivation towards Technology Use

Admittedly, not every student was enthusiastic all the time about being assigned to reflect on their recorded performances.

Participant A said,

> … Sometimes I don't feel like reflecting. I don't want to listen to myself maybe; I just want to do it and not listen to my recording.

However, most participants in fact seemed to view the practice of reflection as being useful.

Participant K said,

> It … motivate[d] [us] to improve our English"

Participant F noted, "This is an interesting way to practice listening and speaking"

Self-Awareness and Responsibility

Despite describing not always appreciating the practice of reflecting through use of VoiceThread recordings, Participant A said,

> You can like listen to yourself and, like notice things that you don't notice while you are speaking. So you can see how your performance is. … then you can improve … and make it better.

Participant B said,

> Yeah I never saw myself on … video before so… It's kind of cool and I can see how I perform and then I just improve what I need to improve.

Participant C reported,

> … We had a chance to assess ourselves to revise the discourse markers [within subsequent trials of a speaking assignment] … in order to remember better … what you have taught us.

Participant D acknowledged that the annotation activities encourage "students [to have] more dependence [sic] [or responsibility] to check themselves."

Participant I said,

> It's good to assess yourself because when … the teacher gives just the grades, you will not… go to the [sic] VoiceThread. … but when you assess yourself you will see the video. And you will notice everything.

In addition to checking themselves, it was possible that the use of VoiceThread encouraged students to take initiative to record themselves multiple times during class time in order to get the best possible recording, even though they only had to record themselves once

Self-Efficacy

Students using VoiceThread seemed to express a sense of self-efficacy.

Participant E noted,

> … doing a lot of speech and talking in the class and outside of class. …Certainly… VoiceThread [allows me to perform] better I mean. … [The] first time usually I am not doing good so I can … record another time. That is one of the ways that makes me [perform] better.

Table 4-9: Question 1 Coded According to Concepts Associated with Deci and Ryan's (1985) Regulatory Styles

Example key words /phrases from transcripts	Thematic Code	Axial Code	Approximate Incidence of idea among Interviewed Participants
• I don't feel like reflecting (Participant A) • Maybe it's better to comment for somebody else (Participant H)	• Motivation towards technology use	*amotivation*	2/15 (13.3%)
• "This is an interesting way to practice listening and speaking" (Participant F)	• Motivation towards technology use	*intrinsic regulation*	1/15 (6.7%)
• "we tr[ied] to remember the discourse markers" "(Participant C)	• Motivation towards technology use	*external regulation*	3/15 (20.0%)
• If I [am] not satisfied with my recording, I can record again (Participant E) • you can know your strength and what … your weakness [was]" (Participant B) • It helped me to correct [myself] (Participant L)	• self-awareness and responsibility • self-efficacy	*identified regulation* or *integrated regulation*	9/15 (60.0%)

Summary of Qualitative Research Question 1

The purpose of this first set of research questions was to ascertain the level of engagement and motivation students experienced within these annotation-related assignments. Students reported being able to better notice details about their recorded performances. In order to understand student motivation in a different and perhaps deeper level, it is useful to refer to

Deci and Ryan's (1985) theories of motivation and to use their motivation-related concepts as further axial codes. Students' orientations towards the mediated activities included exemplifications of *intrinsic motivation*, for example, statements such as "this is an interesting way to practice listening and speaking" (Participant F). On the other hand, many participant comments seem to exemplify Deci and Ryan's concept of *integrated regulation*. For example, participant D commented, "students [have] more dependence [or responsibility] to check themselves." Arguably, the more "integrated" regulation styles correlated to deeper forms of engagement. Not every student always demonstrated a high degree of engagement in these annotation-related learning activities. Participant A exemplifies Deci and Ryan's concept of *amotivation* towards annotation in her comment "I just want to do it and not listen to my recording." In addition, Participant H, seemed to feel commenting on one's own performance was a bit too repetitive and that it might have been more useful to analyze another student's recording. Within table 4-5, the researcher categorized each interviewee's transcript according to their apparent regulatory style as according to Ryan and Deci (2000). Nevertheless, table 4-5 implies that most students seemed engaged and that this engagement led to at least a moderate degree of regulation. Although some students appeared to feel that the annotation exercise was somewhat of a rote exercise, most other students seemed to identify the exercise as being useful in adapting their behaviors to meet more long-term goals related to language learning.

Qualitative Research Question 2

Why do these students hold these attitudes and why do they exhibit these levels of motivation and engagement?

This second question seeks to determine *why* students exemplified either a high or low level of motivation towards technology use. Intrinsic motivation occurs because of the inherit

fulfillment of a task and the inherit fulfillment of personal achievement (Deci and Ryan, 1985). Nevertheless, within the context of education, factors such as curriculum design are also crucial when considering student engagement. The researcher identified thematic codes related to attitudes towards *technology and its design*, including *affordance of privacy*, and *social aspects* of the technology. Other thematic codes related to the *communicative language focus within the curriculum*, including *individualization within the communicative language skills curriculum*, the *enduring importance of teacher feedback*, and the *benefits of small group work format*. Within axial coding, the research examined psychological needs corresponding to *relatedness, competence,* as well as *autonomy* (Ryan and Deci, 2000, p. 73). Useful insights related to reasons students felt engaged or unengaged emerged from the interview data.

Attitudes towards Technology and its Design

When participants discussed the design of VoiceThread, overall they had positive comments. His comments often related to the ability to easily share files privately as well as being able to take advantage of the convenient video capabilities of VoiceThread. Participant F said,

> …we can share with friends. And it connects with the mail at [the university] to the classes.

Participant C said,

> I sometimes record myself with the help of my smart phone. …It is not as useful as using VoiceThread because I can see myself. I can see how I look; I can see whether… whether I have used my body language or something like that…

Practicality and convenience was also mentioned as a benefit of having access to VoiceThread. Participant E said,

> You don't have time for speak in the class one by one so you just record [your assignments]

> … the VoiceThread and that makes the class [go] fast. And we can learn some more from the teacher [during] the class.

Participant D commented on the convenience of the fact that VoiceThread was completely online.

> I record myself on the class, and after the class I can check the performance [at] home for example and I can fix [mistakes].

Overall, students commented positively upon the design of the media platform. Although in class sometimes it seemed like there was a bit of a learning curve at the beginning of the academic term, there did not seem to be any substantial usability issues that impeded students being able to use the technology over the duration of the academic term.

Affordance of Privacy

Participant I discussed the affordance of privacy that recording on VoiceThread provides. Because VoiceThread is completely online, students can easily record, view and re-record in the privacy of their own homes.

Participant G said,

> I try to improve in a private [setting] because it makes [me] more comfortable after that… I [can] try to talk in front of the class. This is a good thing.

Social Aspects of the Technology

While some students seemed to place great value upon privacy, other students seem to value the potential social aspect of VoiceThread.

Participant H said,

> Maybe it's better to comment for somebody else…or to compare with another classmate… I think also … partnership in the class…is an interesting way to practice listening and speaking.

Communicative Focus within the Curriculum

Although the issue was not part of the interview protocol per se, one student discussed the communicative nature of the speaking curriculum.

Participant B said,

> You know in your class we … have dialogs and we play the roles with the different people and I think it is kind of very effective. I think how to become persuasive is the most important [speaking-related lesson].

When discussing discourse markers, Participant B noted,

> The discourse markers you have introduced us are really, really useful because [if, for example,]… you're going to give advice to people and if they understand your intention, they will pay attention to what you were going to tell them.

Enduring Importance of Teacher Feedback

In commenting upon day communicative speaking curriculum in the classes, which integrated use of VoiceThread, a repeated theme related to the enduring importance of teacher feedback even within the context of students being able to reflect and, even, in a sense, assess their own performances. Even as they seem to appreciate the opportunity to provide feedback on their own performances using this media platform, students reiterated the continued importance

of the teacher providing plenty of feedback. Participant F said that although she appreciated the use of VoiceThread, she was unsure if her pronunciation and grammar would improve if the teacher did not if provide feedback with regard to these areas; students leaving annotations on their own video recordings did not seem to be enough.

Individualization within the Curriculum and Meeting Individual Goals

It seemed apparent that individual students often had individual, specific concerns related to their communicative speech, such as pronunciation, grammar, vocabulary, and use of discourse markers. Although the focus of the annotation exercises was to increase students' awareness of their use of discourse markers, the ability of students to reflect and annotate upon their video recordings provided a degree of individualization towards working towards improvement in speaking tasks. When asking students about the process of reflecting annotating, students often rose different concerns with regards to their recordings.

Participant A said,

" I thought that I made a good point but … I did not. I needed to add more information."

"I need to look at [using different] words to say the same thing…improve my vocabulary"

Describing recorded partner work, Participant F commented,

"I need to listen again and understand what the others are saying. And I practice my listening…

Participant J noted that re-listening to recordings allowed her to remember "errors in my sentence[s], or grammar mistake[s]" that she had previously made and allow her to make improvements in future conversations or other speaking contexts.

Small Group Class Format

Participant F mentioned the benefit of working in small groups.

> We don't want to raise our hands to say a lot [in front of] the whole class, but in the group …[we will] not be nervous"

On the other hand, Participant G discussed potential drawbacks of group work. In particular, in discussing the group project role play, he suggested that it was difficult to coordinate with partners, even if they had similar majors.

Participant G commented,

> I think to it is important to combine or make groups with same experience.

Summary of Qualitative Research Question 2

The answer to these questions related to why students either demonstrated or failed to demonstrate engagement with VoiceThread is a bit complex and is entangled with multiple factors. On a surface level, these factors can be identified as design and convenience issues related to technology, the social aspect of using technology, privacy issues, issues related to teacher feedback, individual-specific learning goals, and the small group format conducive to using this particular technology. In synthesizing these thematic ideas within coding, concepts related to regulatory styles (Deci and Ryan, 1985) seem to emerge: the concepts of *autonomy, relatedness* and *competence* all related to the idea of *contextual support* (Chen and Jang, p. 742) as a prerequisite towards demonstration of more integrated forms of motivation. That is, being able to use technology without being frustrated by complications related to usability affects users' overall engagement and motivation to use this technology; design conveniences, such as able to record, re-record, and share files easily affords students' sense of *competence*. Overall

students felt VoiceThread's design was user-friendly and the online format was convenient. VoiceThread allowed students to practice speaking tasks at home where they felt they could make mistakes without being ridiculed. Students describe a wide range of preferences in using this technology. While some students described a preference towards working at home and in small groups, other students described a desire to share their media with others and expand communicative exercises to outside the classroom. As mobile technology continues to improve, these types of out-of-the-class assignments may become more and more feasible. The technology itself contributed to a degree of *contextual support* which in turn lead to student engagement.

In addition to the design of the technology itself, the classroom context related to the teaching and learning of communicative language skills also contributed to student engagement. Students seemed to appreciate the small group format of many of the communicative activities; these socio-affective factors also lead to a greater degree of engagement. Although they seemed to suggest the effect of the technology on self-regulation, students reiterated the enduring importance of receiving adequate feedback from the instructor. Educators that use positive feedback which promotes a sense of competence among students promote intrinsic motivation (Deci and Ryan, 1985, p.59). Although the technology seems to assist in self-regulation, the technology in itself does not always contribute to students' senses of competence and/or it does not in itself provide students with sufficient information with regards to how to gain competence within this particular context of communicative speaking skills. Students seemed satisfied with the curricular context of using VoiceThread to engage in communicative speaking practice. They seemed motivated to use the technology to further their advancement within these lessons. Students' engagement with the technology seemed to be dependent upon the amount of human

feedback they received from their teacher as well as the curricular context, which suggests a *low transactional* classroom distance (Moore, 1993). These two factors seemed key to whether students were motivated in providing their own feedback and assessment towards their recordings. Table 4-5 summarizes factors, besides intrinsic nature of the VoiceThread-related tasks, which contribute to students' motivation or lack of motivation towards use of VoiceThread. The themes or codes are assigned a number and percentage corresponding to the number of students' transcripts within which the particular theme emerged. In addition to the design of the technology itself, *contextual support* in the form of a dynamic curriculum that promoted social interaction as well as sufficient feedback from the instructor, seemed to be key to student engagement.

Table 4-10: Question 2 Axial Coded According to Concepts Associated with Deci and Ryan's (1985) Regulatory Styles

	Example key words /phrases from transcripts	Thematic Code	Axial Code	Approximate Incidence of idea among Interviewed Participants
Attitudes towards technology and its design	• We can share with friends. And it connects with the mail at [university] to the classes (Participant C) • Maybe it's better to comment for somebody else (Participant H)	• design and/or convenience of technology • social aspect of the technology	• *autonomy* • *relatedness*	3/15 (20.0%)
Communicative language focus within the curriculum	• I try to improve in a private [setting] because it makes [me] more comfortable after that.(Participant G)	• privacy	• *competence*	2/15 (13.3%)
	• When you, the teacher gives just the grades, …you will not go to the voice thread. …but when you assess yourself you will see the video. And you will notice everything. (Participant I)	• context of teacher feedback	• *competence* • *autonomy*	4/15 (26.7%)
	• I need to look at [using different] words to say the same thing…improve my vocabulary. (Participant A) • I think how to become persuasive is the most important [lesson] (Participant C)	• meeting individual-specific language learning goals	• *competence*	7/15 (46.7%)
	• We don't want to raise our hands to say a lot [in front of] the whole class, but in the group …[we will] not be nervous (Participant F)	• small group class format	• *competence*	2/15(13.3%)

Summary of Results

A repeated measures analysis of variance (ANOVA) was used to analyze treatment 1 and treatment 2 experimental group differences with regards to discourse marker frequencies over time. Results yielded a significant main effect for four of the five hypotheses; discourse marker counts were significantly higher within the post-tests. These significant main effects provide a strong measure of evidence that VoiceThread was an effective means to promote students' appropriate use of discourse markers within communicative speech tasks. However, no interaction effect was revealed. Results failed to reveal the usefulness of digital annotations using VoiceThread in promoting any significant improvement with regards to any one particular category of discourse marker as according to Fung and Carter's categorization scheme or the use of discourse markers in a general sense. Nevertheless, qualitative results demonstrated that most interviewees exemplified more integrated oriented forms of motivation as according to Deci and Ryan's theories of motivation. Arguably, these more *integrated regulation styles* correlated to deeper forms of engagement. Factors relating to technology design as well as curriculum-related factors contributed to a greater sense of engagement among students.

CHAPTER V: DISCUSSION AND CONCLUSION

Contributions to Research

This research provides evidence supporting the use of VoiceThread, a web-based media platform, to support the appropriate use of discourse markers within communicative speech. With respect to both the treatment 1 and treatment 2 conditions, main effects related to time were significant within four of the five analyses relating to the hypotheses. The ability for students to record and observe themselves within VoiceThread, which, within this research, served as an approximate form of a media-based ePortfolio, is a likely factor leading to an improvement in communicative skills. Hence, this research provides much-needed insights related to not only the use of VoiceThread, but also useful insights regarding the development of communicative speaking skills, which are often viewed as being difficult to assess, within a variety of communicative speaking tasks. Even though the curriculum of the ESOL Center classes lacked specific learning objectives related to discussion skills and other communicative skills, students still demonstrated the ability to improve in their use appropriate forms of communicative speech. Although pre-existing research literature on communicative skills and communicative skills assessment does not seem to integrate a variety of speaking tasks as within this current study, the current study provides evidence related to the effectiveness of a technology-rich curriculum which integrates a variety of communicative tasks in facilitating these communicative skills.

In addition, this research study provides useful qualitative results which demonstrate that most students overall were engaged within the communicative speaking activities mediated by VoiceThread's technology. The effectiveness of the underlying conditions within both treatment group 1 and treatment group 2, which involved basic functions of VoiceThread is most

likely due to (a) the relative ease-of-use of VoiceThread's basic functions within a platform approximating that of an ePortfolio (b) increased opportunities for reflection, engagement and motivation on the part of students with respect to the repeated recordings produced within class time, (c) greater opportunities for the instructor-researcher to provide useful feedback upon student performances, and, as a result, (d) a greater degree of *social presence* (Short et al., 1976), invigilation or *low transactional distance* (Moore, 1993) on the part of the instructor made possible through convenient video recording of student performances.

In addition to highlighting the usefulness of VoiceThread, this research provides insights related to the current limitations of this web-based media platform. That is, this study did not reveal significant results associated with an interaction effect within any of the five hypotheses. In this respect, this research could not provide evidence of the effectiveness of the use of video-based digital annotations to promote communicative speech. Nevertheless, these findings support the idea that suggests that this further research to alternative forms of digital annotations, for example, text-based digital annotations, may be worth pursuing, particularly as technology advances and becomes easier to use. This research demonstrates both the effectiveness and the current limitations of VoiceThread. Moreover, this research calls attention to important pedagogical and methodological issues and provides a foundation for future research to build upon.

Comparing the current research with research within existing literature yields further useful insights. For example, it is useful to contextualize the findings of the current research within the context of related existing research on ePortfolios, particular that of Baturaya and Daloglu (2010) and Tan and Tan (2010). Baturaya and Daloglu (2010) found no significant

differences between students who kept an online writing portfolio and those who did not. On the other hand, the students within Tan and Tan's (2010) study, demonstrated significant differences on speaking test scores of spoken Chinese between those students who kept an audio blog and those students who did not. The current research supports the idea that having students keep records of spoken speech as artifacts within an audio blog or ePortfolio of sorts may offer greater benefits than having language learners keep a portfolio of writings. Both treatment 1 and treatment 2 groups within the current study kept an ePortfolio of sorts within VoiceThread and subsequently demonstrated improvement in speaking skills over the course of the academic term; therefore, the current study supports the idea that audio blogs or oral performance-based ePortfolios benefit language learners in their development of oral skills.

The current research provides useful insights with regards to gains in language skills within the context of metacognition and modality of language. Huang (2010) reported reflection the form of individual oral reflection did not yield significantly higher oral production scores (p.252). This particular finding supports the findings of the current study with regards to use of digital annotations: spoken reflection seems to be less effective than other forms of reflection, such as written reflection or spoken reflection within social interactions. Furthermore, Huang found that in general, students' self-reported metacognition strategies in the context of speaking tasks were significantly negatively correlated with oral speaking scores. At first it seems as if Huang's research may discourage educational researchers from conducting research on metacognitive strategies within speaking contexts: As Huang suggests, too much focus on metacognition may in fact impede the progress of "less advanced learners" because an inordinate amount of time spent thinking may impede action, particularly among this group of learners. On the other hand, a greater focus on metacognitive strategies may be more appropriate for

advanced learners seeking to further progress in their abilities to produce and participate in sophisticated language tasks (p.254). Differences between the proficiency levels of participants between the students within Huang's study and the current study may have resulted in the findings that do not exactly correspond to each other: While the participants within Huang's study were at an "intermediate proficiency level" (p. 248), students within the proficiency level of this study were at a more upper-intermediate to advanced proficiency level. Therefore, even if Huang's intermediate students seemed to not benefit from many forms of metacognitive activities, advanced learners in other studies, including the present study, seemed to in fact benefit from these reflective activities.

This research provides useful foundational insights for future research with regards to the use of media annotations. While Huang's study demonstrated significant results related to written reflection upon speaking tasks, this current research was restricted to oral modes of reflection due to VoiceThread's limitations in terms of its annotation capabilities. The VoiceThread platform is promoted and used primarily for the purpose of asynchronous chatting and not for annotations. In addition, at the current time, VoiceThread does not afford contiguous comments to be created along a slider bar of the original audio or video file as YouTube does. The ability to annotate videos using text instead of video would seemingly be more consistent with Clark and Mayer's *modality principle* related to eLearning and multimedia and would lead to more effective learning. That is, the ability to annotate videos using text instead of video would be less likely to overload the visual channel of the learner's cognitive load (Clark and Mayer, 2011 p.100). As technology advances, further research might focus on the use of a media platform more similar to YouTube's annotation capabilities. Unfortunately, concerns about the perceived security of YouTube annotations as a media platform and limitations related

to VoiceThread's annotations lead to statistical results that did not reveal definitive evidence for the use of video-based digital annotations. However, this research provides useful foundational insights for future research with regards to the use of media annotations.

Design Based Research (DBR)

The current research study still serves a practical function as an example of design-based research (DBR); that is, a form of research concerned with the potential of instruction design upon student learning (The Design-Based Research Collective, 2003). This study provides educators, researchers, and software developers with practical insights and points of reference for future research. For example, educators and researchers may decide to re-implement the discourse marker test used within this study, which proved to be sensitive to an increase in students' abilities to use discourse markers. Thus, researchers and educators reusing this communicative test would thus giving greater attention to students' appropriate use of discourse markers within communicative speech. Educators can also use this design to consider using VoiceThread in both conventional and unconventional ways while being mindful of the instructional time required for integration of VoiceThread. As a form of research analogous to certain aspects to action research, the researcher acted within an instructor role within this research and learned to improve instruction during the course of the research. That is, while software developers have a key role in improving the quality of technology implementation in classrooms, teachers themselves can improve the quality of technology-enhanced instruction through using technology in more effective ways. This research affirms the importance of engaging communicative lessons, particularly those involving opportunities for reflection, in

facilitating language learners. Truly, the social and affective domains of classroom teaching are indeed important and multi-modal learning can indeed have an impact. In addition, software developers may view this research as a clue to the usefulness of VoiceThread as a platform approximating ePortfolios and may be motivated to integrate more sophisticated text-based annotation functionality to future versions of media platforms such as VoiceThread. The design-based research exemplified by this study affords educators, researchers and software developers useful insights related to useful instructional practices.

Implications for Teaching

This study's use of communicative speaking tasks integrated within ePortfolios as a part of a curriculum support the ideas of Lattuca and Stark with regards to the importance of metacognition in the class. That is, although many teachers might be hesitant to spend class time on activities such as the ones described within this study, metacognitive activities are likely to be worthwhile in the long run. Although it was not revealed that the extra time spent on metacognitive activities via use of annotations contributed to the ability of students within treatment group 2 to be more effective at using discourse markers effectively within their tests, further research may yield more definitive results. Most students involved in the research seemed to be engaged in the process of using of a media platform approximating the use of portfolios with the added affordance of simple annotation capabilities. The lessons described within the study may not appeal to many teachers due to factors related to technology and assessing recordings. However, as technology advances and becomes more user-friendly and intuitive, more and more teachers may begin see the value of such lessons. In particular, if VoiceThread integrates more contiguous text annotation capabilities, more teachers may be interested in such

types of activities. In addition, in the future, teachers may find that these types of activities will actually reduce their grading load by allowing students to assess their own speaking assignments, thus creating a schema of assessment shared between students and teachers, a cooperative form of assessment. In the meantime, however, it may be less useful for teachers to provide video or audio-based annotations as feedback upon students' audio or video recordings. On the other hand, within the instruction of writing skills, it may be more useful for instructors to provide audio or video-based annotations as feedback upon students' writings. Further research on ePortfolios on communicative speaking tasks and/or use of media annotations may provide both empirical evidence and practical insights for educators that may make teaching and assessing speaking skills less daunting for many teachers.

Limitations of Research

Generalizability of this research is limited due to multiple factors related to sampling and experimental conditions. First, the sample of the research was limited to a particular university ESOL center with a demographic that may not match other university ESOL centers or other language learning contexts. The sample size was relatively small; only 68 students participated. It is possible a larger sample of participants would have yielded a significant interaction effect although the effect size of this statistic would probably be small. These students represented an upper-intermediate to advanced level of language proficiency. Therefore, the results may not be generalizable to more elementary-level learners. Furthermore, generalizability issues surround the fact that this research was conducted within the classroom of one particular instructor with one particular pedagogy which included a specific set of strategies with regards to communicative language teaching. Generalizability of this research is limited for all the above

reasons relating to sampling and experimental conditions.

The testing instrument and procedures within this study was limited in certain regards. Due to time limitations in classes, the speaking test lasted only about 11 minutes and only about 3.5 minutes of student audio were collected. Because this test needs to be administered twice during each academic term involved in the research study, over the course of the academic term, each student participated in 22 minutes of this discourse-related testing and about seven minutes of audio were collected from each student for later transcription. Relatively speaking, seven minutes of audio recording per participant over the course of an academic term is not an extensive amount of data.[13] Nevertheless, because it was considered important not to occupy an excessive amount of student-participants' class time, it was considered important for the test to be relatively brief, especially since at the outset it was intended that the research would be conducted within the classrooms of teachers other than the researcher. In order to gain acquiescence to conduct research in other participating teachers' classes, it was considered important not to occupy an excessive amount of time. In fact, failure of the research to reveal significant differences between treatment group 1 and treatment group 2 in terms of discourse marker usage may be due to the relative brevity of the pre-academic term and post-academic term assessments. In fact, more long-term studies may identify the effectiveness of using conditions similar to those used within treatment group 2. Furthermore, if the discourse marker test used within this study was expanded to include a greater multitude of situational tasks necessitating, or perhaps, more complex tasks, results may have yielded a significant difference

[13] For instance, within the field of clinical psychology research, the adult attachment interview (AAI) involves an hour's worth of recording and transcription is described as requiring four hours' worth of subsequent coding (De Haas et al, 1994 p. 473).

between treatment 1 and treatment 2 groups. The testing instrument and procedure were limited in certain regards.

Evaluation of student performance on the test instrument within this study was limited in several respects. Although certain elements relating to the concept of communicative competence are measured within this research using computational methods, more holistic measures of communicative competence are not integrated within this study. Failure to utilize instruments representing a more holistic measurement of communicative competence, such as the aforementioned Educational Testing Service SPEAK test, which necessitates multiple raters, or some other form of interview protocol, was due to lack of the resources necessarily to implement such a test to the large number participants for this study, once at the beginning of the academic term and once again at the end of the academic term. The researcher simply did not have the human resources needed to conduct such an experiment. Thus, the rating system was limited in certain respects.

The list of discourse markers used within the study used to assess the test, though arguably extensive, cannot be considered entirely complete. Indeed, it may be impossible to achieve such a task of compiling a "100% complete" set of discourse markers. At times, the researcher took minor liberties with regards to the definition of a *discourse marker*. Moreover, it is possible that at times students used / misused discourse markers as *verbal fillers,* or *linguistic hedges* (Holmes, 1986 p.15) for example, in contexts when more appropriate vocabulary should be used or in context when a word is used to "buy" time because of lack of appropriate vocabulary retrieval. Although the Intra-Rater Correlation Coefficient suggested that for the most part, students were using the discourse markers in a purposeful way, the system of

measurement within this study was not perfect. Future research might utilize multiple human coders to minimize errors related to non-purposeful use of discourse markers.

There were limitations relating to the actual results of the research. None of the five null hypotheses, which related to the usefulness of video-based digital annotations, were rejected. Therefore, the effectiveness of such annotations was not revealed. In addition, although the study provides evidence relating to the effectiveness of VoiceThread's basic functions, use of a control group within this research may have provided more definitive evidence with regards to whether the lessons within the treatment groups contributed directly to students' abilities to use discourse markers appropriately. Within such a control group, students could, perhaps participate in communicative lessons but not use VoiceThread to record their performances. However, such an arrangement may lead to questions related to validity and ethics since the teacher of such a control group may have greater difficulties in providing the students within this control group feedback on their performances without the benefit of recordings. In addition, as previously mentioned, the host ESOL center's level 4 and level 5 official speaking curriculum objectives did not include various communicative skills, such as academic discussions, debates and role-plays. Therefore, it would have been extremely difficult to collect data from other ESOL center classes beyond the sections that the researcher-instructor taught: Teaching and assessing the various communicative speaking lessons was labor intensive and it proved to be infeasible to ask other instructors to take part in these lessons that were beyond the scope of the required curriculum. Another limitation of this research relates to the fact that the qualitative portion of the QUAN➔qual research did not include interviewing of students within treatment group 1 to provide a basis of comparison to students' within treatment group 2. The statistical results relating to this study were limited in certain respects. Despite shortcomings, this research

provides useful insights as well as a foundation for future research to build upon.

Challenges Related to Conducting Research

The researcher faced challenges in conducting this research. For example, obtaining data to obtain a sufficiently-large sample and to provide uniform classroom conditions among students within the two treatment conditions was a challenge. In considering how to collect data for this research, it was difficult to ask other instructors to sacrifice their class time to take part in teaching that would conform to the specific treatment 1 and treatment 2 conditions. Each instructor at the ESOL center tends to have her or his particular teaching style, hence it would have been difficult to impose such a series of lessons upon another teacher's classroom. Ideally, it would have been better in terms of validity to conduct this research only within one particular proficiency level of students in a particular class, for example, either in the upper-intermediate or the advanced level of classes at the ESOL center, but not in both. The administration at the ESOL center was quite flexible and amenable in granting the request of the researcher-instructor to teach sections of the upper-intermediate and/or advanced levels of listening and speaking skills classes for multiple semesters. Nevertheless, because of staffing needs at the ESOL center, it was usually not possible for the ESOL Center's administration to allow the researcher-instructor to teach multiple sections of one particular level of listening-speaking classes; in order to compensate for these differences between these two levels of instruction, the researcher balanced students within the two levels of instruction between the treatment 1 and treatment 2 group conditions. Although sampling issues proved to be challenging to the researcher, statistically significant main effects across both treatment group 1 and treatment group 2 revealed improvements between beginning-of-term and end-of-term assessments.

Another challenge related to obtaining student data related to student attendance and use of technology. If a student was not present during the lab session when the pre-test was given, that student's data could not be used even if that student's post-test data was available. Similarly, is a student was not present during the lab session when the post-test was given, that student's data could not be used even if that student's pre-test data was available. In addition, many students did not sign the student consent forms, and their data were not used. Because of these complications, the data collection phase within this research took more than one year to complete. In addition, the researcher also faced challenges related to the use of technology. There was a bit of a learning curve with regards to use the annotation technology, which was not completely intuitive to students at the start of the semester. Particularly with advances in technology, it may be easier for future researchers to conduct research on the use of ePortfolios within communicative speaking contexts and/or use of digital annotations.

Suggestions for Future Research

Future research might help to compensate shortcomings related to the testing instrument, rating system, and sampling within this research. Since the pre- and post- test in this research focused exclusively upon students' abilities to use discourse markers within communicative speech, future research could study the ability of digital annotation technology to facilitate improvements in other aspect of spoken language, for example, pronunciation, vocabulary, and/or grammar. Because the communicative speaking assessment involving discourse markers was relatively short because of time constraints, only two interrelated interpersonal tasks were included on the assessment. Future research could expand the testing instrument and subsequent analysis to include a broader variety of specific interpersonal contexts which may be

better suited to detect metacognitive skills. Future research might focus sampling upon a narrower range of proficiency levels. Future research using more comprehensive testing instruments and rating systems as well as narrower sampling could provide further insights to the concepts raises within this research study.

Future research might also investigate different modalities of reflection. This future research might compare instruction involving cooperative annotation activities[14], with individual annotation activities, which was the dominant strategy within this study. Findings could possibly find that the reflection process is best undertaken within a social setting that matches the interpersonal nature of most communicative language tasks. Psychologists suggest that metacognition and mentalization is developed within nascent social interactions, for example, between parents and children (Sharp and Fonagy 2008). Therefore, future research might attempt to expound upon the socially-based reflective class exercises within Huang's (2010) study, which were shown to produce significant results in terms of language production; future research could attempt to apply Huang's findings to various type of learning technologies, for example within social use of annotations. Although the researcher initially felt that having discussions about speaking performances might intimidate shy students, he has recently had a change of heart. Thus, within future research, researcher-educators could seek to more explicitly help students to be aware of how class peers and others perceive them within various contexts involving communication, both inside the classroom and outside the classroom.[15] In addition, researchers could investigate text-based annotations upon videos, such as through the use of YouTube annotations. This research could determine whether the *modality principle* (Clark and

[14] as integrated within Howard's (2012) study
[15] Patri (2002) demonstrated that students can learn to assess peers accurately.

Mayer, 2011) applied to interactive video-based reflections within language learning contexts.

Given the significant main effect within the current research, future research on the use of ePortfolios on communicative tasks would be useful to expand upon the findings of Tan and Tan (2010) who focused upon use of audio blogs to teach speaking skills. This research could compare the effectiveness of student learning artifacts based upon didactic speaking skills versus more interpersonal speaking skills. Because the current research did not seek to control the use of ePortfolios as an independent variable, future research could seek to isolate the factor of ePortoflio-based instruction within the teaching of communicative language skills.

Future research could seek to better understand the process of metacognition experienced by students. In addition, future research might focus upon analyzing the reflections of VoiceThread for language indicating deeper modes of reflection versus more superficial forms of reflection. Text analysis of the language within the reflections could be analyzed to determine which type of reflection promotes a greater degree of metacognitive thinking and, in turn, a greater degree of improvement with regards to communicative speaking tasks. Furthermore, future qualitative surveys might include questions such as:

- *Could you give an example of something you learned from this class about communication that you applied in another setting?*
- *Either inside the classroom or outside of the classroom, how do you think others perceive you when you give a presentation and/or engage in a conversation with them?*

Lastly, because the qualitative portion of the QUAN➔qual research did not include interviewing of students within treatment group 1 to provide a basis of

comparison to students' within treatment group 2, future research could seek to provide this basis of comparison either in the form of qualitative interviews or, perhaps more preferably, in the form of a quantitative survey instrument. Such a quantitative survey instrument could seek to better understand differences in the treatment groups with respect to engagement and metacognitive processes. Future research could build upon foundational insights provided by the current study.

Summative Conclusion

The importance of this study relates to the need to provide English language education to international students, a demographic of growing importance within U.S. higher education. The researcher hopes that results of the study can be applied to other language learning contexts as well. Language educators often attribute importance to the ability to convey complex ideas through spoken language as well as the ability to use spoken language in the processes of cultural adjustment. Nevertheless, these important communicative speaking skills are too often not given due attention within language curricula, including language testing. At the same time, research has not bridged the literature on instruction of spoken language with innovations such as technology integration and use of metacognitive strategies within the curriculum. This type of literature could serve as practical guidance for educators and instructional designers.

Quantitative results within this study support the idea that basic functions of VoiceThread, a web-based multimedia platform supports students' use of various types of appropriate discourse markers within communicative speech. This study was not able to reveal support that VoiceThread's video-based digital annotations can promote students' use of discourse markers within communicative speech. Qualitative results suggest that VoiceThread's

basic functions as well as its annotation technology may facilitate metacognitive processes among students. Further research may be needed to more definitively ascertain this relationship. Qualitative results suggest a high degree of engagement within these mediated learning activities and that technology can represent an important factor in assisting students in general communicative language development. Future research is needed in order to gain a more complete assessment of the usefulness of these technologies. Future development and broader access to affordable technologies is likely to provide further potential improvements within language education. The researcher hopes that this research can serve as a foundation for future research to assist educators in making both eLearning and traditional, face-to-face learning more interactive, engaging and conducive to deep learning involving metacognitive practices. In addition, the researcher hopes insights gained from this research serve to encourage educators to view teaching and assessing a variety of communicative speaking tasks as less of a formidable prospect.

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APPENDICES

Appendix A: Discourse Marker Test

- Complete the following tasks, which include conversations, role-plays and short presentations.
- Use as many appropriate discourse markers as you can.

- Discourse markers include "signpost language" and other useful expressions and cohesive devices in your responses. This type of language might include:

Examples: Discourse markers, "signpost language" and other useful expressions and cohesive devices THIS IS NOT AN EXHAUSTIVE LIST	
Conversations and role plays	• "May I ask if…" • "I'm sorry, but…" • "I'm afraid I don't agree. I feel…"
Short responses and short presentations	• "I'd like to discuss…" • "In addition,…" • "For example,…" • "To summarize…."

- Speak clearly and talk for as long as you can. If you finish before everyone else, just wait quietly. Please do not turn off your microphone.

- You are free to make notes during your planning time

1. Briefly introduce yourself (Warm-up) (5 seconds to plan; 10 seconds to speak).

2. Asserting your opinion: Pretend you are having a class discussion / debate with a partner in class about technology in society. Pretend you have taken notes. Use these notes to agree and/or disagree with your partner. You may agree/disagree with everything or just certain ideas. You are encouraged to include your own ideas and experiences. Remember to use appropriate discourse markers.

(25 seconds to plan; 45 seconds to speak).

Partner's opinion	My opinions
Certain technologies are harmful to society I. Cell phones a. distract peoples at the wrong / dangerous times, e.g. when driving b. used inappropriately in social settings II. The Internet a. Threatens traditional, responsible journalism, e.g. newspapers b. Illegal file-sharing threatens the ability of musicians to earn money c. Internet addiction d. Children become too dependent upon media e. Lack of privacy	

3. Now imagine that you are a university lecturer within a business class. You will give a short lecture about the effects of the internet on business. Examine the lecture notes. You will have 45 seconds to look over the notes. When I say to begin, speak about at least part of the short lecture. Speak for 45 seconds about at least a few points within the outline. Remember to use appropriate discourse markers. (45 seconds to plan; 45 seconds to speak).

Effects of the Internet on Business	Notes
I. Introduction and outline of speech II. Internet Commerce • Enhanced choice and convenience for consumers • Easier to track and manage inventor • Disadvantages? ○ III. Focused advertising • Social media sites generate income from advertisers who can track media users • Disadvantages? • Efficient means to collect data • Issues related to privacy • ▪ IV. Outsourcing and telecommuting ▪ Hiring employees who do may not work in the same community V. Conclusion:	Outline the main ideas ? Other examples? transition? Other examples? transition? Take-away lesson?

4. Imagine that you are giving a short persuasive speech about online education. Examine the lecture notes. Choose one of the two outlines. You will have 45 seconds to look over the notes. When I say to begin, speak about at least part of the short lecture. In other words, speak for 45 seconds about at least a few points within the outline. If you wish, you may include your own related ideas. Remember to use appropriate discourse markers. (45 seconds to plan; 45 seconds to speak).

Choose one		Notes:
Online Education is Useful ("Pro")	Online Education is Not Useful ("Con")	
I. Types of technology commonly used • Online videos and readings • Discussion boards • Online drop boxes to submit assignments II. Flexibility and Efficiency ▪ Students can work at their own pace ▪ Students can watch videos multiple times ▪ III. Counterarguments • Students may not be motivated (Brown, "Computers and Society") • Students may miss face-to-face interactions with peers and teachers. • Other counterarguments? IV. Learning Environment ▪ Shy students may feel more comfortable • V. Conclusion?	I. Types of technology commonly used • Online videos and readings • Discussion boards • Online drop boxes to submit assignments II. No face-to-face interaction with instructor or student peers ▪ Expectations confusing? ▪ Can't make friends in class easily ▪ Discussion more difficult? III. Counterarguments • Students have flexibility to work at own pace • Students can watch videos multiple times IV. Difficult to use for "hands-on learning," • Biology and chemistry labs • Nursing classes • Art, dance and theater classes?	How would you respond to this?

5. Negotiate tasks:

5a. Pretend that you are a leader of a group working on a class project. You have written an agenda for your first group meeting but you will need to be sure to express yourself politely. If you wish, you may include your own related ideas. Although you do not need to address each part of the agenda, remember to use appropriate discourse markers and to be polite / formal. (45 seconds to plan; 45 seconds to speak).

Agenda	Notes:
I. Introductions You, Frank, Natalia II. Choice for projects – 3. Business marketing plan (my preference) 4. Market analysis III. Division of work – 5. Library research? 6. Interviews? 7. Math 8. Write the report IV. Meeting times, e.g. 3. 4:30 pm in the library? 4. After dinner somewhere	

Who are you?

Tell me the advantages and disadvantages

Who is going to…? Last time I was in a group project

I don't want to do this.

Someone else

It must be at a convenient time for me

5b. Pretend that you are a leader of a group working on the same class project a week later. You have written an agenda for your group meeting but you will need to be sure to express yourself politely although your plans are not going as smoothly as you would have hoped. If you wish, you may include your own related ideas. Although you do not need to address each part of the agenda, remember to use appropriate discourse markers and to be polite / formal. (45 seconds to plan; 45 seconds to speak).

Agenda	Notes:
V. Deadlines: ~~June 16~~ June 7 VI. Time Management Issues– 1. Don't waste time talking about what you did last weekend at group meetings!!! 2. Meet group deadlines! 3. If you need help, ask the group! VI. Progress and help– 1. Frank – library research – e-mailed on Mon.: needs help locating articles. (Missed the last deadline – give me one more article!!) ☹ 2. Natalia – interviews – e-mailed on Tues..: needs help with finding businesspeople to interview 3. You – math Need a bit of help with spreadsheets and statistics	My mistake, sorry Be polite but firm Be polite but firm offer to help him? teach him? Don't do this!! offer to help her? Request for help?

END OF TEST - thank you for participating!!

Appendix B: Qualitative Survey Instrument

(Treatment 2 Group only)

1. Describe your experience using VoiceThread.

2. What was it like to assess yourself?

3. Do you think this was a productive use of class time? Why or why not?

4. Did you improve in your speaking abilities this semester? If so, do you think technology such as VoiceThread helped?

5. What strategies were helpful in improving your speaking this semester?

Appendix C-1: Letter of Consent for the Treatment 1 Group

Student Informed Consent Statement

The effect of media annotation technology on enhancing the use of discourse markers within communicative speech

INTRODUCTION

The Applied English Center (AEC) at the University of Kansas protects human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not allow the researcher to use your data within the research. You should be aware that even if you agree to allow your data to be used, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with the teacher in this class, your class grades, or your relationship to the University of Kansas.

Although all students in class will need to participate in short beginning-of-term and end-of-term speaking tests, students do **not** need to have their data used within the research study. Choosing to have your data used within the research study will have **no** effect on your class grades. Moreover, choosing not have your data used within the study will have **no** effect on your class grades. In other words, although students must participate in these short tests, students must first give permission to have their data used as part of my study. Again, this involvement is entirely voluntary (optional) and students may choose to stop their participation in the study at any time.

PURPOSE OF THE STUDY

The fundamental hypothesis underlying this research is that use of digital video and audio can be used to improve the teaching and learning of communicative speaking skills. These types of technologies are often used within classes at the Applied English Center.

PROCEDURES

Participants in this study are students from intermediate and advanced levels of English classes at

the Applied English Center. All students in class will participate in a speaking test at the beginning and end of the academic term. Each of these tests will last approximately 10 minutes. The results are for research purposes only (they are not part of the regular curriculum); they can help the researchers understand communication skills students have at the beginning and end of the academic term. The test will involve students debating ideas, giving short presentations and other speaking tasks. **None** of the questions or tasks I would ask you as part of this test are personal in nature. After the test, the recorded media files will be transcribed. These pre-and post- test media files and transcriptions will be kept in a locked file and stored in the researcher's office. Only the researcher involved in this study will have access to the files and the transcriptions. If you have any concerns about the test files, you can contact the researcher.

If you choose, I would use the data from your speaking tests at the beginning of the semester and at the end of the semester. I would not include your name in any of my research: No use of names would be used in the study though I may use pseudonyms (fake names) that are not similar to real names of students. Your identifiable information, including the actual media recordings, will **not** be shared unless you give me permission. If you choose to participate in the study, recordings from interviews and from tests assignments may be transcribed for use in research, but it should be impossible to identify individual students only from these transcriptions.

RISKS

This is a low-risk study. You will complete one short speaking test at the beginning and another short speaking test at the end of the academic term so that the researcher can assess communicative speaking abilities of students and related improvement. If you feel uncomfortable having your data collected, they can stop it at anytime. All information collected from the pre-and post- tests will be kept confidential and only used for this study.

BENEFITS

You would benefit from gaining some insight into communicative speaking skills. At the end of the academic term, the researcher and/or teacher may share your personal speaking test results with you.

Because of individuals like you who participate, I believe educators will be able to more fully understand the effectiveness of media technology, how to best teach communicative speaking skills, and

how to make learning more engaging for students.

PAYMENT TO PARTICIPANTS

If you volunteer for this study, you may choose to receive $10 for use of your data. Investigators may ask for your social security number in order to comply with federal and state tax and accounting regulations.

PARTICIPANT CONFIDENTIALITY

Participation in this study is solicited, but strictly voluntary. Your name will **not** be associated in the research findings and identifiable information will not be shared unless (i) it is required by law or university policy, or (ii) you give written permission.

In addition, your information remains in effect indefinitely. By signing this form, you give permission for the use and disclosure of your data information that you allowed me to use for purposes of this study at any time in the future.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose further information collected, in writing, at any time, by sending your written request to: *Ryan Olesh, rmolesh@ku.edu.*

If you cancel permission to use your information, I will stop collecting additional information about you.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher(s) listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my child's rights as a research participant, I may call (785) 864-7429, write to the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

The researcher may use:

Circle

a. Speaking test scores and their transcripts. (No actual media files will be shared). **yes**

b. Transcriptions of reflections on VoiceThread

(No actual media files will be shared). yes no

c. Short follow-up interviews to be scheduled at a later date (about 5-10 minutes) yes no

(No actual media files will be shared).

Speaking test scores and their transcripts. (No actual media files will be shared).

Print Participant's Name

_____

Signature of Participant Date

_____ _____

Researcher Contact Information

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Lawrence, KS 66045

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Appendix C-2: Letter of Consent for the Treatment 2 Group

Student Informed Consent Statement

The effect of media annotation technology on enhancing the use of discourse markers within communicative speech

INTRODUCTION

The Applied English Center (AEC) at the University of Kansas protects human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not allow the researcher to use your data within the research. You should be aware that even if you agree to allow your data to be used, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with the teacher in this class, your class grades, or your relationship to the University of Kansas.

Although all students in class will need to participate in class activities involving use of technology and ePortfolios and participate in short beginning-of-term and end-of-term speaking tests, students do **not** need to have their data used within the research study. Choosing to have your data used within the research study will have **no** effect on your class grades. Moreover, choosing not have your data used within the study will have **no** effect on your class grades. In other words, although students must participate in ePortfolios related activities, students must first give permission to have their data used as part of my study. Again, this involvement is entirely voluntary (optional) and students may choose to stop their participation in the study at any time.

PURPOSE OF THE STUDY

The fundamental hypothesis underlying this research is that electronic portfolios (ePortfolios) involving use of digital video and audio as well as VoiceThread can be used to improve the teaching and learning of communicative speaking skills. That is, it is hypothesized that the process of analyzing and reflecting upon recorded media is useful to students as they learn communicative speaking skills.

PROCEDURES

Participants in this study are students from intermediate and advanced levels of English classes at the Applied English Center. All students in class will participate in a speaking test at the beginning and end of the academic term. Each of these tests will last approximately 10 minutes. The results are for research purposes only (they are not part of the regular curriculum); they can help the researchers understand communication skills students have at the beginning and end of the academic term. The test will involve students debating ideas, giving short presentations and other speaking tasks. **None** of the questions or tasks I would ask you as part of this test are personal in nature. After the test, the recorded media files will be transcribed. These pre-and post- test media files and transcriptions will be kept in a locked file and stored in the researcher's office. Only the researcher involved in this study will have access to the files and the transcriptions. If you have any concerns about the test files, you can contact the researcher.

While teaching students throughout the academic term, your teacher will ask you to periodically record short presentations. These presentations may include short didactic speeches and/or conversations and debates with peers. Then, you will analyze and reflect upon these recordings with VoiceThread, a web-based application which is password secure. (Students use their KU passwords). That is, you will need to analyze important parts of your recordings using VoiceThread using its video function. These reflection assignments should not require much more than a few minutes per week on the part of students.

If you choose, I would use the data from your speaking tests at the beginning of the semester and at the end of the semester. I would not include your name in any of my research: No use of names would be used in the study though I may use pseudonyms (fake names) that are not similar to real names of students. Your identifiable information, including the actual media recordings, will **not** be shared unless you give me permission. If you choose to participate in the study, recordings from interviews and from tests assignments may be transcribed for use in research, but it should be impossible to identify individual students only from these transcriptions.

Additionally, with your permission, I may like to ask you to:

(b) Answer some questions about your experiences with technology and communicative speaking practice. **None** of the questions I would ask you are personal in nature. You would need to talk to me in my office for some time between 30 minutes and an hour if you agree, but you can stop at any time you do not wish to continue. I would need to record you but I would delete/destroy the audio files after I finish this assignment. The sound files would not be shared with anyone. All data collected from this study will be kept in a secure location

either on my computer and/or on a private password-protected area on Blackboard.

(c) Allow me to use the transcriptions from your VoiceThread analyses. Again, no use of names would be used in the study though I may use pseudonyms (fake names) that are not similar to real names of students. Again, it should be impossible to identify individual students only from these transcriptions.

RISKS

This is a low-risk study. You will complete one short speaking test at the beginning and another short speaking test at the end of the academic term so that the researcher can assess communicative speaking abilities of students and related improvement. You will experience lessons related to practicing communicative speaking skills. If you feel uncomfortable having your data collected, they can stop it at anytime. All information collected from the pre-and post- tests will be kept confidential and only used for this study.

BENEFITS

You would benefits from gaining some insight into communicative speaking skills through the self-reflection within follow-up questions. At the end of the academic term, the researcher and/or teacher may share your personal speaking test results with you.

Because of individuals like you who participate, I believe educators will be able to more fully understand the effectiveness of media technology, how to best teach communicative speaking skills, and how to make learning more engaging for students.

PAYMENT TO PARTICIPANTS

If you choose to participate in this study, you may choose to receive $10. If you choose to answer additional follow-up interviews, you may choose to receive an additional $5. Investigators may ask for your social security number in order to comply with federal and state tax and accounting regulations.

PARTICIPANT CONFIDENTIALITY

Participation in this study is solicited, but strictly voluntary. Your name will **not** be associated in the research findings and identifiable information will not be shared unless (i) it is required by law or university policy, or (ii) you give written permission.

In addition, your information remains in effect indefinitely. By signing this form, you give permission for the use and disclosure of your data information that you allowed me to use for purposes of this study at any time in the future.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas.

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If you cancel permission to use your information, I will stop collecting additional information about you.

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I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

Circle

The researcher may use:

a. Speaking test scores and their transcripts. (No actual media files will be shared). yes no

b. Transcriptions of reflections on VoiceThread

(No actual media files will be shared). yes no

c. Short follow-up interviews to be scheduled at a later date (about 5-10 minutes) yes no

(No actual media files will be shared).

Print Participant's Name

_____

Signature of Participant Date

_____ _____

Researcher Contact Information

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